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ALBERTA FISHING EDUCATION PROGRAM

Alberta
FORESTRY, LANDS
AND WILDLIFE
Fish and Wildlife

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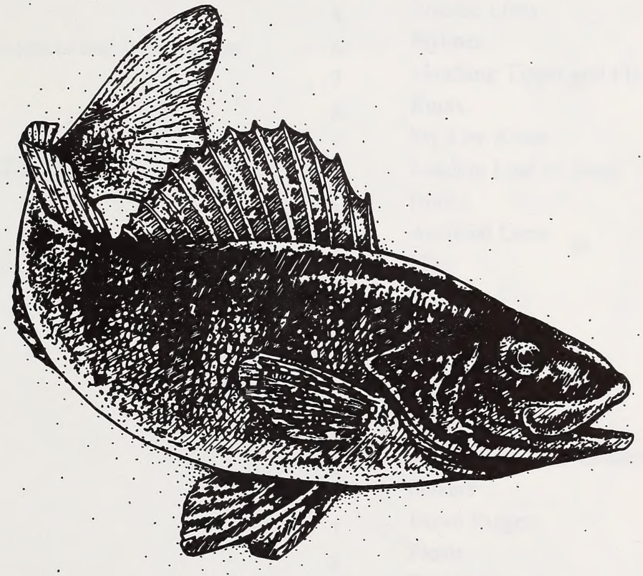
Alberta Fishing Education



The effort and assistance of many people from both within government and the private sector is acknowledged and appreciated. Without their help this manual would not have been possible.

Alberta
FORESTRY, LANDS
AND WILDLIFE
Fish and Wildlife

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Introduction

Introduction

The primary goal of the Alberta Fishing Education Program is to assist Albertans in understanding the management and conservation of our fish resources and the role of recreational fishing.

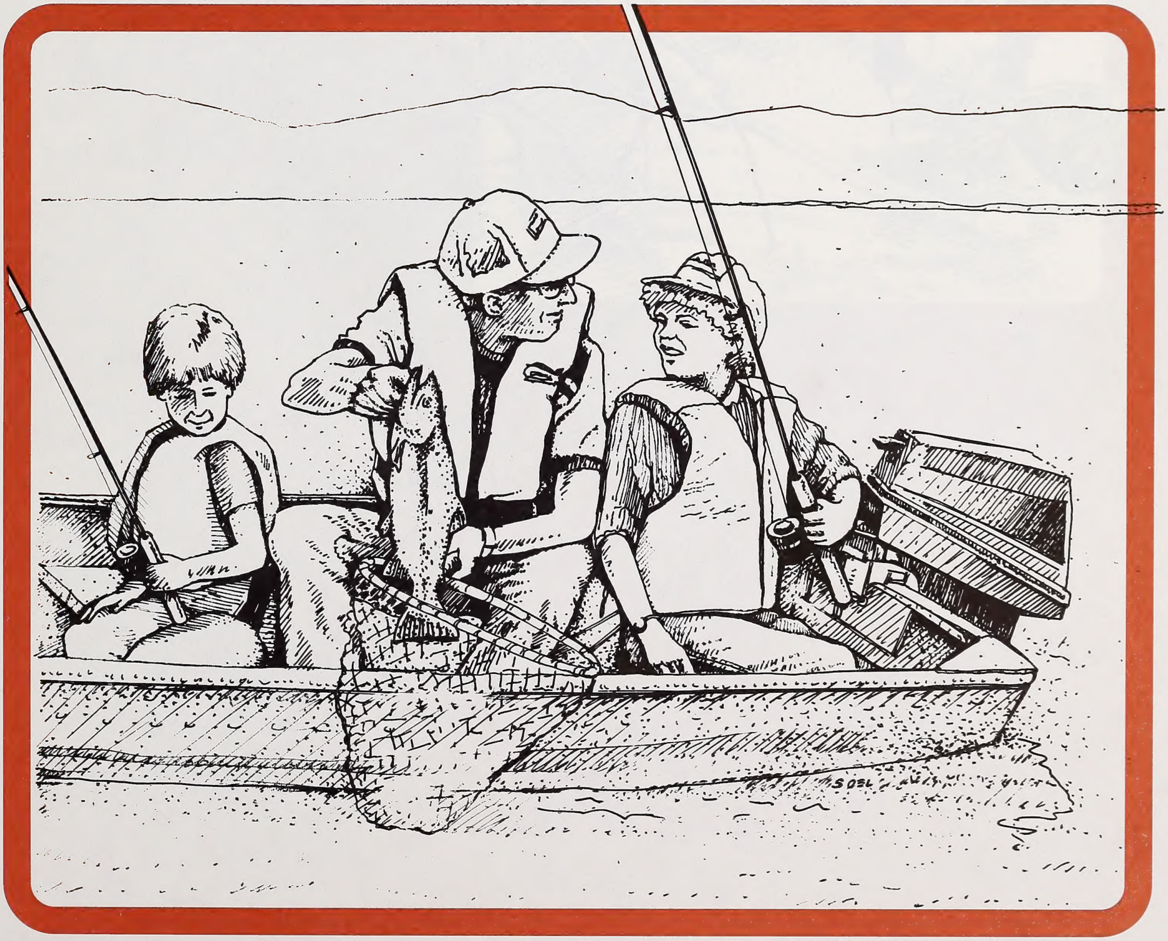
To provide an opportunity for Albertans to better understand the biological aspects of fishing, the types of equipment, the various fishing techniques, the utilization and consumption of fish, safety aspects, and the social and legal standards of conduct when partaking in this outdoor recreational activity.

Fishing is an environmentally and socially acceptable outdoor recreational activity. The Alberta Fish and Wildlife Division has provided this manual to give you a better understanding and appreciation of fishing. This manual is not designed to teach you how to become a master angler; however, it is hoped that you can gain a basic knowledge of sport fishing. Through better understanding of the activity, your future fishing experiences should be more enjoyable.

The Alberta Fishing Program includes a variety of subject areas that must be completed for you to qualify as a successful graduate. To supplement this manual, your instructor may include additional information on other topics related to fishing. To test your skills and how much you have learned, an exam is given. Upon passing the exam, you will receive a certificate and crest to show that you have completed the course.

Alberta has high quality angling at present. To ensure this remains, the emphasis will have to be on a quality fishing experience, rather than using angling to fill your freezer. The Alberta Fish and Wildlife Division needs and appreciates your help in using our fish resources wisely.

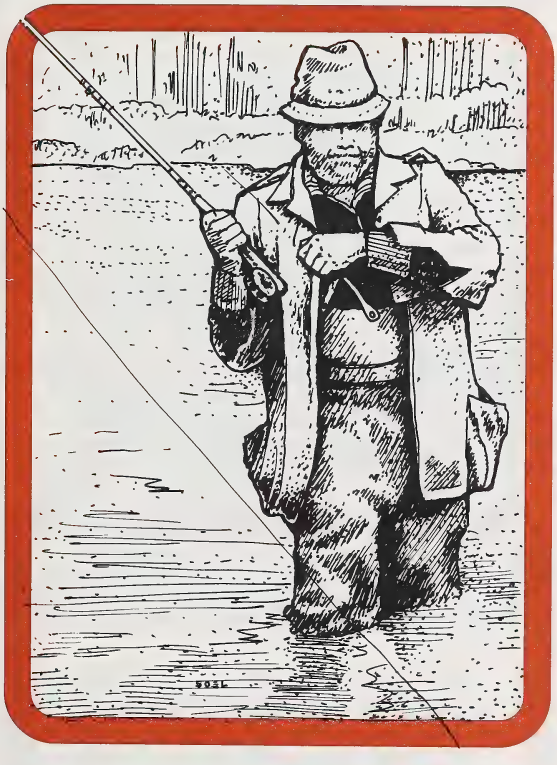
We hope you have a fulfilling outdoor experience whenever you go fishing. The information given in this manual provides you a good start - the next step is to get out and go fishing.



Management

Introduction

There are many reasons why people go sportfishing; some want to catch large fish; some want to catch many fish; some like to go to lakes, others to streams, many want a quiet wilderness setting; others do not mind crowded conditions; some want to test their skills and all are looking for a relaxing form of recreation. Fishermen have a variety in preference for species also. Trout are the most preferred with walleye a close second and pike and perch following behind walleye. It is a major challenge to provide the opportunity for sportfishermen to seek out their varied fishing objectives within the variety of species and types of aquatic habitat that are available. To manipulate both the fishery and the fish populations to satisfy the needs of fishermen and conservation is complicated and requires a complex fisheries management program.



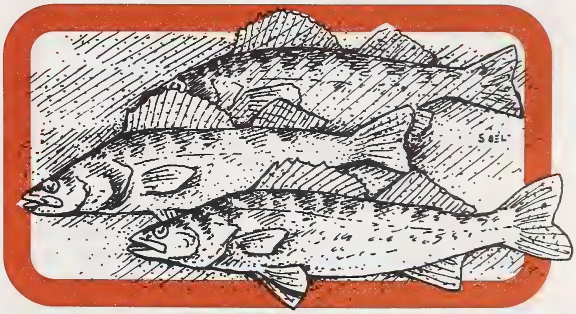
Fisheries management is a process of manipulating the fishing activity, and the fish populations to ensure a continued supply of fish of various species and various sizes for recreational and commercial fishing. Fish are a renewable resource, which has the capability of reproducing and replenishing itself. Through both experience and research it has been found that a portion of a fish population can be removed without impairing the populations ability to replenish its numbers. This generally is possible because fish spawn many more eggs than are required to maintain populations.

Identifying the amount of fish that can be taken from a population and controlling the size of the catch, through fishing regulations, is the primary responsibility of any fisheries management program. In addition to controlling the catch of naturally produced fish, fisheries management is also responsible for stocking fish, which are produced in fish hatcheries, and for changing the aquatic habitat to make it produce more fish or larger fish. The fisheries manager has several tools in the form of fishing regulations, fish stocking, aquatic habitat improvement, law enforcement and public information programs available to meet the goal of ensuring enough fish to provide recreational, commercial and domestic fishing.

A. Fishing Regulations

Fishing regulations are used to control the number of fish taken, provide protection to fish during critical times such as spawning and to provide an equitable distribution of the catch among the fishermen. Each type of regulation has a function to perform and is designed around the habits and characteristics of the species of fish involved.

1. **Fishing Closures:** Designating times when fishing cannot take place is used to protect fish when they are spawning or when they are congregated in large numbers and are vulnerable to being easily caught. Fish need protection when spawning because they are congregated and easily caught and often too much disturbance will cause the fish not to spawn. Heavy fishing on spawning fish will in time result in reduced numbers of eggs laid and a decrease in the number of fish produced.



Fish in streams will move into large pools for the winter. When they are congregated in pools they become very vulnerable to fishing and can be quickly reduced in number by only a few fishermen. By not allowing fishing when fish are congregated and waiting until they disperse from spawning areas or over-wintering pools, it requires that the fishermen spend more time to find and catch the fish. In this way fewer fish may be caught leaving some to be caught at another time or by another angler and provides more recreation time.

Fishing closures in the spring months are for spring spawning fish such as rainbow and cutthroat trout, pike or walleye. Closure during the fall will be for fall spawners such as lake trout, bull trout or brown trout. Winter closures are on most streams in the eastern slopes as fish are congregated in the deeper pools. There are a few streams that are closed all year because they are spawning and rearing areas where the small fish stay for up to three years before leaving. An example is the closures on the tributaries of the upper Clearwater River. These are spawning and rearing areas for bull trout.

2. **Size Limits:** Size limits are designed to provide protection to fish within certain size ranges. Size limits are generally expressed as the length of the fish. There are three types of size limits; the minimum size limit, the maximum size limit and what is called a slot limit.

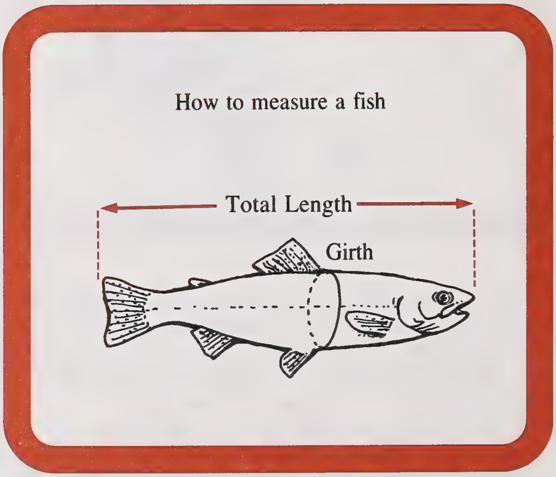
The minimum size limit is the size below which any fish caught must be released. Minimum size limits are used to protect fish until they reach a certain size when they have spawned once or twice. The use of such a limit is to ensure that enough spawning takes place to maintain the fish population. Minimum size limits vary by species and within a species in different areas. For rainbow and cutthroat trout, the minimum length in some areas is 25 cm and in other areas where fish growth is slower, it is 17.5 cm. For sturgeon, which grow very slowly and mature at an older age, the minimum size limit is 1 metre.

A maximum size limit is designed to provide protection to the larger fish to either maintain the trophy nature of the fishery or to protect the most productive spawners.

Large fish are always the oldest fish and have survived several years of predators, fishing, disease and other factors which may cause mortality. As a result the oldest fish are always the least numerous. In some fish populations, particularly with trout, the larger fish take any floating food first before the smaller fish. For this reason the larger fish usually take a fishing lure first. This can result in the larger fish being severely reduced in number. A maximum size limit requires the fish over that size be released and this will allow other fishermen the opportunity to experience catching large fish. In some species of fish or in some populations, the larger fish are the most productive spawners and carry the largest numbers of eggs. By protecting these fish, adequate numbers of eggs are ensured for spawning.

In Alberta, on the Bow River from Calgary to Carseland weir, there is a maximum size limit on trout of 40 cm. This was established to maintain the numbers of large size trout and thus the trophy nature of the fishery. A further benefit that was gained from this size limit was an increase in number of large trout in the spawning run. This will help maintain adequate spawning and maintenance of this trout population.

A slot limit is a size limit in a defined size range (or slot) such as between 30 cm and 50 cm in length. All fish in that size range must be released. This type of size limit is often combined with a catch limit of one fish larger than the upper limit. A slot limit is designed to allow some catch of fish under the maximum size, (which may be lost to predator disease or other forms of natural mortality) and to allow a limited take of very large or trophy fish. The slot in the size range is protected to ensure that there is a maximum number of the most productive size fish maintained to ensure adequate spawning.



How to measure a fish

3. **Bait Restriction:** Restriction on the use of bait on fishing hooks, or lures, is designed to accomplish different objectives depending on the location and the type of bait. Bait is any substance other than glass, metal, plastic, wood, or rubber that is put on a hook or lure (made of the previously mentioned materials) to attract fish. Most bait is a natural material such as meat, worms, insects, corn, cheese, small fish or parts of fish. Such bait usually functions by releasing an odor into the water which in turn attracts the fish.

Restrictions on the use of bait are most often used in combination with regulations that require the fisherman to release fish alive, such as size limits or catch and release fishing. Considerable research has found, particularly for trout, that fish caught on baited hooks have a much higher death rate after they are released than fish caught on unbaited hooks. The reason for this difference is that fish take baited lures much deeper into their throat and the hooks are often near the gills. Removing such hooks often causes gill damage, which is generally fatal. To remove such hooks also requires handling of the fish, which can cause internal damage and subsequent death. Unbaited hooks and lures generally catch the fish more in the tongue and front part of the mouth and are much easier to remove. It requires little or no handling of the fish and reduces the chance of serious damage.

Restrictions on the use of some species of small fish (bait fish) in some waters is designed to stop the accidental spread of fish into areas where they could cause problems and a serious reduction of desirable species. In Alberta, fishermen may catch and use dead sticklebacks, suckers, minnows (shiners) and trout perch for bait in most waters. They are not allowed to use the fish in trout waters. Although these fish must be dead when used for bait, it is often difficult to tell if they are dead. If suckers were to be put into trout waters by a fishermen throwing out what he thought was dead suckers after he was finished fishing, and they survived, the trout fishery would be greatly reduced within two to three years. Suckers compete for food with the trout and will slowly out compete the trout and result in fewer trout surviving. By ensuring that these undesirable species of fish are not put in good fish producing waters, a maximum production of desirable fish can be maintained.

4. **Daily Catch and Possession Limits:** Catch limits were originally designed to limit the take of fish, however in most fisheries they do not function this way because very few fishermen catch the limit. In a fishery where every fishermen caught the limit, then reducing the limit would reduce the number of fish taken. In most fisheries only about 10 per cent of the fishermen catch a limit. Under these conditions reducing the limit by one fish would only take one fish away from 10 per cent of the anglers. This could not be considered reducing the total catch, as that one fish may be taken by another angler that did not catch a limit. Daily catch limits, and reduction in daily catch limits function to distribute the available catch among the fishermen. If the limit was 10 fish, but a fishermen had the knowledge and ability to catch 30 fish, then the limit restricts his taking the other 20 fish. These 20 fish would then be available for other fishermen or for the same fishermen on another day. Similarly if the daily catch limit was 10 fish and it was reduced to 5 fish, it would make 5 fish available to other fishermen.

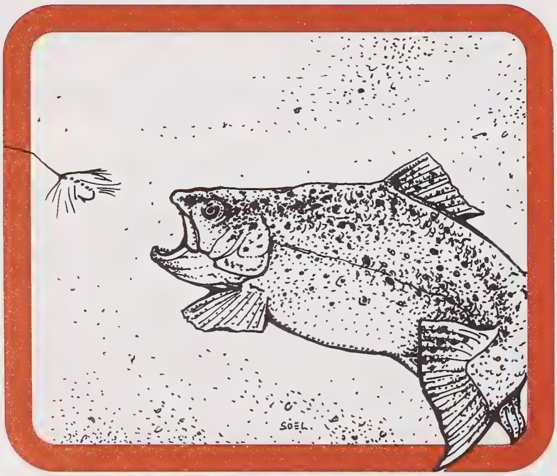
The possession limits, or the fish you may have in your possession outside of your permanent home also functions to distribute the available fish among the fishermen. If a fishermen was camping at a lake for 5 days and the daily catch limit was 5 fish then he could take 25 fish. With a possession limit, which in Alberta is one daily catch limit the fishermen can only keep 5 fish. If he wants to catch and keep more fish in the following days he must either eat what he has kept or take them home. An angler may not keep more than the daily limit, even though he may eat them on that day. By restricting the number of fish the fishermen can have in his possession to 5 then it makes 20 fish available to other fishermen.

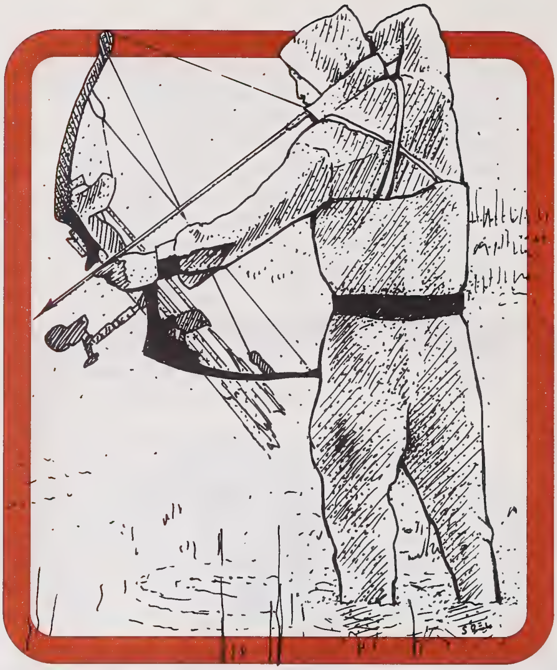
5. **Other Regulations:** There are a number of regulations which limit the amount of fishing gear a sportfisherman may use. These regulations are primarily designed to maintain the "sporting" nature of sportfishing although they also operate to make the fisherman less efficient and reducing the rate he can catch and take fish.

Over the centuries that people have gone sportfishing, an ethic has developed that fishing should be sporting, requiring that the fish be lured to take the hook into its mouth, that sportfisherman be restricted to using one rod-and-line and the number of hooks on a line be limited. It has been however unsuccessfully argued that if there is a daily catch limit, why should there be fishing gear restriction? If the limit is five fish why should it not be allowed to use five hooks or five lines? The regulations attempt to maintain the "sporting" quality as opposed to taking a maximum number of fish as quickly as possible. They try to make the fishing experience a one fish at a time exercise.

In Alberta these regulations are: a sportfisherman may only use one line on which no more than three hooks or lures are attached. For ice fishing the fisherman is allowed to use three lines because he has less opportunity to move around to find the fish than does a fisherman in open water.

Fishermen are not allowed to snag a fish. Snagging is using a large hook and impaling the fish in some part of the body other than its mouth. The concept of sport is to lure the fish to take the hook into its mouth. For this same reason, the use of snares, firearms, lights, or nets are not allowed to take fish. Fish caught by sportfishing may not be sold or traded away as the fishery is considered recreational and not commercial.





The use of a bow and arrow or a spear by a person swimming is allowed. This type of fishing is difficult, and limited to where and when it can be effectively done and often is not as productive as angling. Bow and spearfishing is subject to the same regulations on closed seasons, daily and possession limits as angling and are not permitted to take trout, sturgeon, arctic grayling or mountain whitefish. These species are often found in small shallow streams and could be very easily taken by bow or spearfishing.

B. Fish Stocking

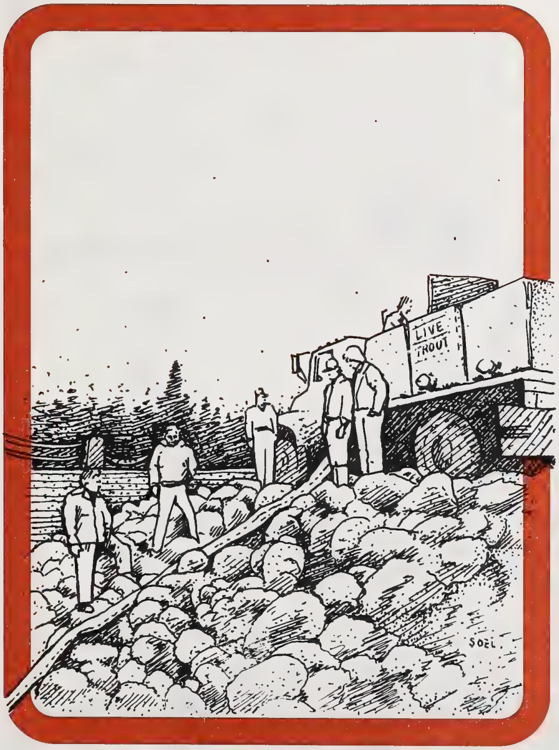
Stocking fish from a fish hatchery or by moving them from a lake or stream where they are plentiful, is done to meet one of four possible management objectives. These are:

1. To develop a new population of fish in a lake or stream that does not presently have fish in it.
2. To assist in maintaining a natural fish population where the spawning is not adequate to maintain the fish population under the fishing pressure. This is usually the result of poor or limited spawning habitat.
3. To establish a new species of fish.
4. To utilize waters that are only capable of supporting fish during the open water season. These are small lakes and ponds that have regular winter-kill.

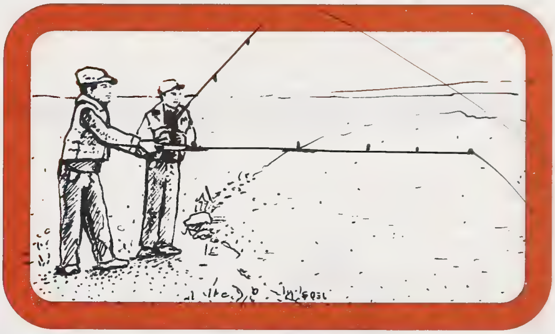
The artificial propagation and rearing of fish in hatcheries is generally referred to as fish culture. Fish produce large numbers of eggs, which when spawned in natural habitat have a very low survival. This low survival results from predators eating the eggs, fish disease and often sudden changes in water temperature or dissolved oxygen levels. The concept of the fish hatchery is to take the eggs from the fish, and hold them in conditions where there are no predators, there is consistent water temperature and dissolved oxygen and there is no disease. By providing an ideal and controlled environment, survival of the eggs can be increased from 5-10% in nature to 75-80% in the hatchery. This increased survival provides fish for stocking and still leaves enough for natural production.

Fish hatcheries have been used in Alberta since 1913, and have produced trout for stocking in many areas of the province. Walleye became a major species raised in the hatcheries in 1982.

Fish stocking is a major fish management program used to create and maintain fish populations. Stocking is used to bring waters that do not contain fish into production to meet the sportfishing demand. Stocking is often used to create fishing near communities where natural fish production does not exist.



In stocking waters that do not contain natural fish, two possible situations may result. If there is suitable spawning habitat the fish will probably become self-reproducing. If there is no suitable habitat then an annual fish stocking program will be required. In Alberta, there are examples of both situations. Many of the rainbow trout in the streams south of the Bow River, including the Bow River, were not originally there, and were established by fish stocking. These populations are now self-reproducing. Many of the trout stocked lakes in Alberta are very good habitat for trout except they do not have tributary streams with suitable spawning habitat. These lakes require annual stocking to maintain the population. All rainbow trout populations in lakes in Alberta are maintained by stocking.



Some lakes do have limited spawning habitat, but not sufficient to maintain the fish population in face of the sportfishing catch. These lakes are also stocked annually to maintain the fish populations.

Fish stocking also has been used to establish species in waters where they did not previously exist. Yellow perch are transferred to many lakes to provide a different species for fishermen as well as a forage species for pike or walleye to feed on. Cutthroat trout have been established in a number of streams north of Nordegg which previously only had bull trout and mountain whitefish. Cutthroat trout mature at an earlier age and produce more eggs than bull trout and will produce more fish quicker to meet the fishing demand.

Many small lakes and ponds throughout the prairie area are very productive and fish can survive and grow quickly in them during the open-water months. During the winter the oxygen levels are very low and there is generally always a winterkill. To utilize the good growing conditions during the open-water season, catchable size trout (15-20 cm long) are stocked right after ice out and an instant fishery is created. These fish will grow to 30-35 cm by September. This is referred to as a "put and take" fishery where catchable size fish are stocked and by freeze-up in late October, are 80-90% caught. These types of ponds have to be stocked every year.

C. Aquatic Habitat Development and Improvement

The quality of the aquatic environment determines how many fish can be produced in it and whether there is suitable spawning habitat so the fish can reproduce naturally. Many natural waterbodies are not perfect habitat for fish, and there are many things that can be done to improve fish production. In addition, many waterbodies, particularly streams, have been changed by the activities of man such as intensive agriculture, road building, or pollution. Much of this damage can be corrected to increase or restore fish production.

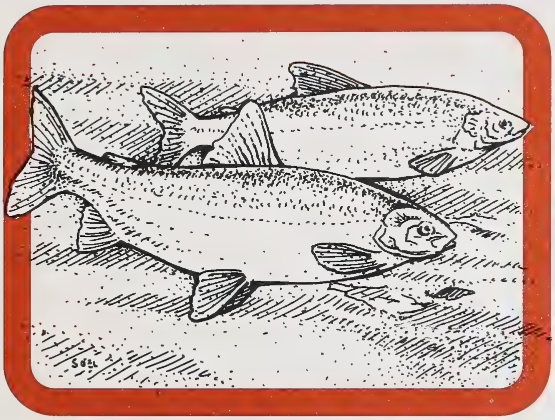
In areas where there is very little suitable water to raise fish, such waters can be created and stocked to provide fishing opportunity. Part of the sportfishing licence fees goes to a special fund called the Buck for Wildlife Fund which is used to pay for such projects.

There are many types of projects that can be done.

1. Stream bank fencing to keep cattle from trampling the bank of a stream and creating erosion and subsequent siltation of the gravel spawning areas.
2. Deepening small ponds to prevent winter-kill and provide winter and summer fishing.
3. Developing ponds or small reservoirs for fish production by taking advantage of gravel pit operations or building small dams.
4. Improving stream habitat by putting large boulders or wing dams in fast flowing sections to provide back eddies and resting places for fish.

Commercial Fishing

Commercial fishing by the use of gill nets has been carried out in many Alberta lakes since the turn of the century. The fishery takes lake whitefish, tullibee, northern pike and walleye that are sold for food in Alberta, other parts of Canada, the United States and other countries of the world. The fishery provides employment and income for about 2 500 people, particularly in northern Alberta.



The lake whitefish is the primary species taken in the commercial fishery. They are present in large numbers in lakes and are widespread throughout Alberta. The gill nets used by the commercial fishermen are not selective for the species they are intended to catch and tullibee, northern pike and walleye are also caught. To ensure that the commercial fishing nets do not reduce the number of fish so they cannot effectively reproduce, there are control regulations in place.

The regulations establish a quota or the weight of each species of fish that may be taken. The size of the mesh of the nets is set by regulation so that large mature fish that have spawned at least once are mainly the ones taken. The length of the nets that may be used in a lake is also set by regulation.

Northern pike and walleye are high on the food chain, and they are fewer in number than are lake whitefish. Also they are a highly-prized sportfish, so much smaller quotas are set on them. These quotas are referred to as tolerance quotas because that is the maximum that can be tolerated or allowed. In addition, there are closed fishing areas set on lakes to keep the catch of northern pike and walleye within the tolerance quota. Commercial fishing seasons are sometime also set at times when pike and walleye are difficult to catch with nets. For example, walleye do not move much during mid-winter and are not easily caught in nets.

In commercially-fished lakes, lake whitefish, northern pike and walleye will occur together. When the commercial fishery is set, it will have a season that could be from two days to two months depending on the size of the fish quotas. For most lakes, the fishery does not take more than two weeks. There would be a quota set for lake whitefish and tolerance quotas for northern pike and walleye. For example, the lake whitefish quota may be 10 000 kg, and the tolerance the northern pike 500 kg and the walleye 500 kg. The quota reached first closes the fishery even if the other quotas are not taken. If the 500 kg quota for northern pike is taken and there are only 6 000 kg of lake whitefish caught, the commercial fishery is closed.

When a commercial fishery is open, the Fish and Wildlife officers check to see that all the regulations are being followed. They maintain a record of the fish caught so that they can determine when a quota is reached and close the fishery.

In some lakes, where sportfishermen, commercial fisherman and domestic fisherman are all taking the same species of fish, such as lake whitefish, the quota for the lake is divided according to the amount of use. For example, on one lake the total quota for lake whitefish was 114 000 kg. This was divided up with 68 200 kg for the sportfishery, 34 000 kg for the commercial fishery and 11 500 kg for the native domestic fishery.

To ensure that the commercial fishery is not taking too many fish, the fisheries managers collect information from the commercially caught fish on their length, weight and age. If any of these measurements start to decrease over a few years, it indicates that too many fish are being taken and the quota has to be reduced. If these measurements become larger or the age become older, then it shows that more fish can be taken and the quotas can be increased.

Through regulations and checking the size and age of the fish, the commercial fishery can be controlled and continue to provide fish for food and employment.

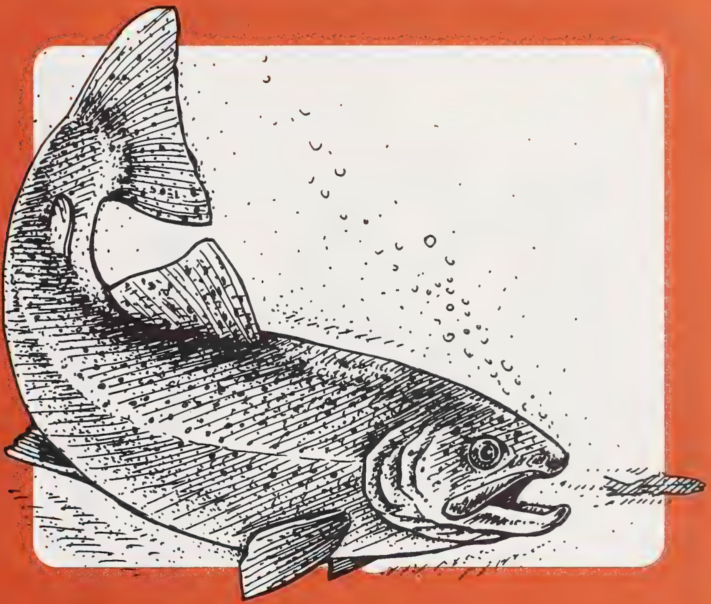
Domestic Fishing

Some native people of Alberta, through their treaties, have been guaranteed their rights to fish for food. This fishery is referred to as the native domestic fishery. In addition, domestic fishing for food is allowed for people such as trappers who live in isolated areas and cannot easily purchase food from stores.

These fishermen require a licence and are allowed to use small amounts of gill net to catch fish. The licence is issued for a specific lake and there is a possession quota set by the regulations. A possession quota is the weight of fish that you can have in your possession at any time. If you eat half of the fish, then you can go fishing again. This quota is to reduce the wasting of fish. There are times when more can be caught than can be eaten, and the remainder may spoil.

Domestic fishing nets, particularly native domestic nets, are often seen in northern Alberta lakes. In most cases these are legally licenced nets and should not be disturbed.

Game Fish Identification



Introduction

What is a Fish?

Broadly stated, a fish is a cold-blooded vertebrate (an animal with a backbone) that lives in water, possesses fins, breathes by means of gills and is usually covered by scales. Cold-blooded means that their body temperature is the same as the temperature of the surrounding water. Water temperature directly controls the rate at which fish feed, digest food, grow and move. When the water is cold, (below 10°C) activity is slow; in warmer water (10°C to 24°C), their activities increase. Fish generally reproduce by laying eggs.

There are many species of fish, and they are characterized by their size and shape, the food they require, and the type and temperature of the environment they prefer. In Alberta, there are 49 species of fish ranging from 3 cm long and weighing a few grams (stickleback) to 250 cm long and weighing 50 kg (sturgeon). They live in a variety of environments, from cold mountain streams to cool foothill lakes, to the deep cold northern lakes. Of the 49 species, there are 17 species which have recreational and/or commercial importance.

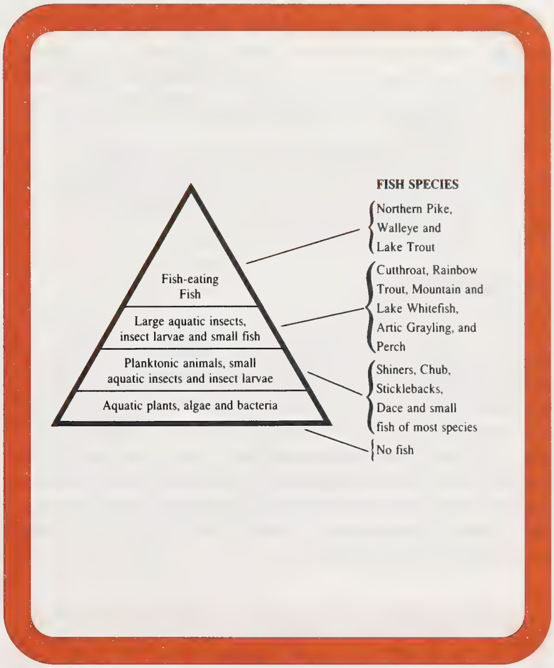
Fish are referred to in several different ways:

(a) by species relationship such as Salmonids (trout), Percids (yellow perch - walleye) or Minnows (shiners and dace).

(b) by water temperature preference such as cold water (trout and whitefish) or warm water (walleye, pike and yellow perch).

(c) by their feeding habits; fish eaters (pike), insect eaters (trout) or plant eaters (none in Alberta).

Characterizing fish by feeding habits indicates where fish are located on the aquatic food chain, and can indicate their relative abundance. A general ecological principle is that the number of animals cannot exceed the food supply. If this occurs, starvation will reduce the number so it balances with the food supply. This relationship can be illustrated by a triangle, with the basic food producers on the bottom and fish-eating fish on the top. Narrowing the triangle represents the decrease in relative abundance of animals from their food supply, as represented by the level below them.


FISH SPECIES
Fish-eating Fish
Large aquatic insects, insect larvae and small fish
Planktonic animals, small aquatic insects and insect larvae
Aquatic plants, algae and bacteria
Northern Pike, Walleye and Lake Trout
Cutthroat, Rainbow Trout, Mountain and Lake Whitefish, Artic Grayling, and Perch
Shiners, Chub, Sticklebacks, Dace and small fish of most species
No fish

Understanding where a particular species is on the food chain assists in illustrating the relative abundance of some species. Walleye will never be more abundant than the perch they feed on. Such a relationship is one major factor in determining catch limits for a species. No fish species in Alberta feeds primarily on aquatic plants.

Fish reproduce by laying eggs (spawning). There is a tremendous variation in location and timing of spawning. Some fish spawn in the spring (rainbow and cutthroat trout, pike, walleye and perch) and some in the fall (bulltrout, brown trout, mountain and lake whitefish). Some fish deposit their eggs on the aquatic vegetation (pike, perch), while others drop their eggs over coarse gravel, with the eggs dropping into cracks between the rocks (walleye, lake trout). Many of the trout species must spawn in flowing water where they bury their eggs in a clean gravel bottom (rainbow, cutthroat and brown trout).

There is tremendous diversity in fish, as they live in many different environments, eat different types of food and have different life habits.

A sportfisherman should have at least a brief knowledge of the habits of the fish species he is pursuing, if he is to successfully catch the fish. Many habits of recreational or commercial fish species are important in determining fishing seasons, catch limits and other regulations to control the number of fish which are caught.

Fish Habitat

Fish live in a world that differs greatly from ours, making it necessary to know something about that world to understand them better. Water is the world of fish and possesses many characteristics that greatly affect the life of its inhabitants.

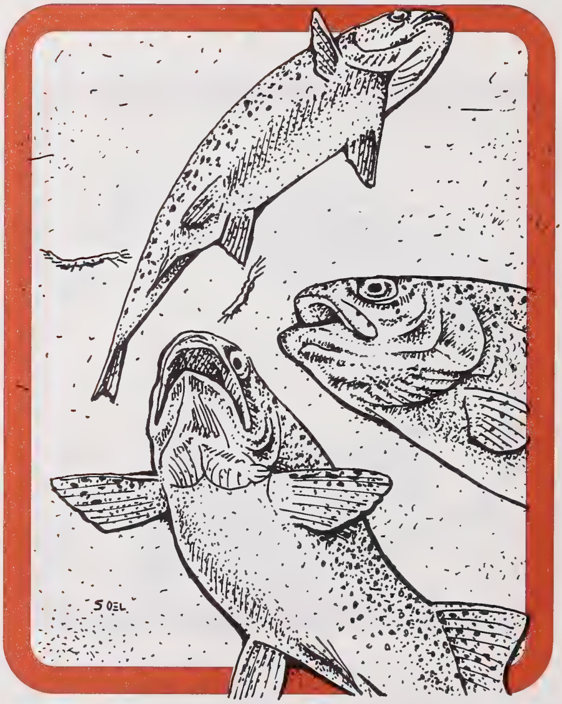
Factors affect fish directly such as temperature, dissolved oxygen, depth and alkalinity (or acidity) or indirectly as in the production of plants, plankton and insects (the fish food supply).

Temperature

Water is a poor conductor of heat. When the lake's surface is warmed in the spring, the temperature in the deeper water remains almost unchanged unless strong, continual winds mix the water. In shallow lakes (under 10 m), wind mixing usually results in the same temperature from top to bottom. In lakes deeper than 10 m, the bottom layer of water will stay much cooler than the surface. In the fall, the reverse takes place; the surface water cools and mixing will eventually result in the temperature being the same from top to bottom.

A fish, being cold-blooded, takes on the temperature of the water in which it lives. Some fish regulate this by remaining in the layer of water of the most preferred temperature. A good example of this is the lake trout, which prefers a water temperature of 10°C or lower. This species remains near the surface immediately after the ice out in the spring. As the surface water temperature increases, it moves to deeper water, generally staying where the water temperature is 10°C. In mid-summer, lake trout often live in water deeper than 23 meters. By fall, as the surface water cools, lake trout will return to shallow waters. This is why the best fishing for lake trout is in the early spring and late fall. The remainder of the summer they are in deep water and difficult to locate.

Fish species all have a preferred temperature, as well as an upper temperature above which they cannot survive. Trout prefer temperatures in the 10 - 15°C range and cannot live in water over 24°C. Pike, walleye and perch, however, prefer temperatures of 15 - 20°C, and can survive in water as warm as 26°C.



Since fish are cold-blooded, their activities, including growth rates, vary with the temperature. In late spring and early summer, fish eat a great deal, grow rapidly and are very active; in the winter they tend to be sluggish, feed less and grow little.

Dissolved Oxygen

Fish, as with other animals, require oxygen, and extract it from the water through their gills. Gills are made up of very delicate finger-like projections through which water passes. These projections have a large blood flow through them which picks up oxygen. Any damage to the gills usually results in a major and critical hemorrhage, often proving fatal.

The lack of dissolved oxygen in the water during winter is a major limiting factor in producing fish on many Alberta lakes. The phenomenon known as winterkill (when all the fish in a lake die during winter) results from a lack of oxygen. Most Alberta lakes are very productive of aquatic plants and algae, producing large quantities of plant material. In the fall, most plants and algae die and the remains sink to the bottom of the lake where they begin to decompose.

Plant decomposition uses up oxygen in the water and often gives off several byproducts such as carbon dioxide, methane and hydrogen sulfide. Once a lake has frozen over, there is a limited source of oxygen to replenish that which is used up. Depending on the depth of the lake, decomposition may reduce dissolved oxygen levels or even use it all up. In shallow lakes (generally under 5 m), the oxygen is usually depleted by spring; such lakes cannot support fish. In deeper lakes, where the dissolved oxygen is only reduced in a layer near the bottom, most species of fish will survive.

Fish have various tolerance levels for reduced dissolved oxygen. Trout and perch are the most sensitive and will not survive dissolved oxygen levels below 20 per cent saturation. Pike are the most tolerant and can survive levels as low as 5 per cent saturation.

Depth

Lake depth influences which species will live and grow there most successfully, because depth is associated with water temperature and dissolved oxygen. In deep lakes (over 25 m), the fish that do best are lake whitefish and lake trout, with small populations of pike and walleye usually in the shallows near the shore.

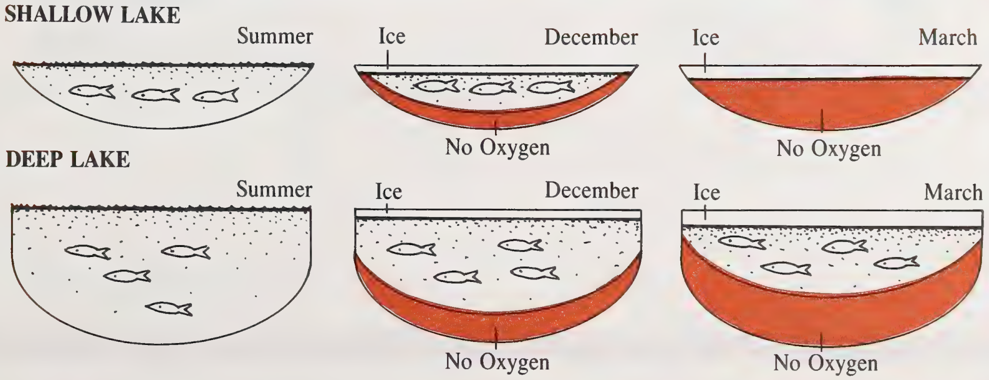
In lakes under 25 m with cold, clear water; rainbow, cutthroat, eastern brook, brown and the Arctic grayling survive best. In lakes under 25 m with warm water, heavy algae and aquatic plant growth, the best species are walleye, perch and pike.

Alkalinity (acidity)

Dissolved minerals in the water will determine if the water is alkaline or acidic. The degree of alkalinity or acidity is measured by pH. The pH scale is from 0-14, with 7 as neutral. From 7 to 0, there is increasing acidity, and 7 to 14 indicates an increase in alkalinity. Most waters in Alberta are neutral to alkaline, with a pH range from 7-11. Much of the water in east-central Alberta is very alkaline with a pH in the 9-11 range; the lake shores often have a white deposit on the shoreline. This white material is referred to as alkali and is a mixture of sodium, magnesium, calcium bicarbonates and carbonates. These chemicals occur naturally and have been leached out of the soil.

Fish will live in a pH range of 6.0 to 8.5. If the pH goes below 6 or above 8.5, heavy fish mortality will occur. In those areas of the world where acid rain is a problem, the pH of lake and stream water often ranges from 4.0 - 4.5 and few, if any, fish survive this. Acid rain is not creating a problem in Alberta.

SHALLOW LAKE - Dissolved oxygen conditions.



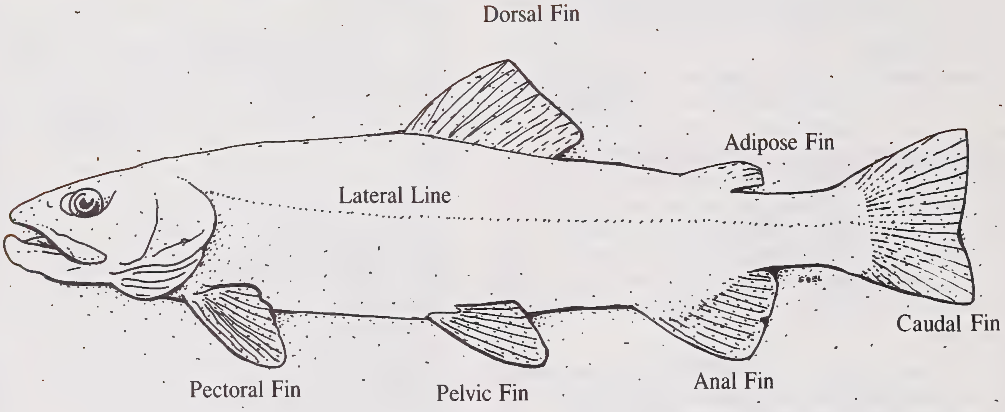
Fish Identification

It is important to be able to identify the fish you are trying to catch. Sportfishing regulations are different for each species and you have to know the species to know which regulations apply to them.

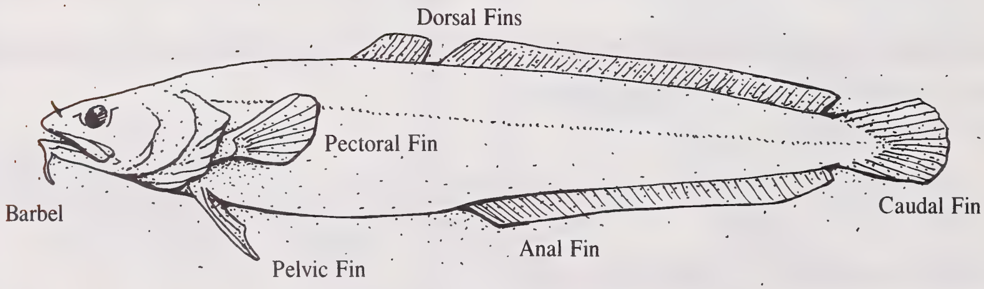
Becoming familiar with the appearance of some of the gamefish will help you learn to identify them. Many museums, colleges and universities have displays of Alberta fish, and there are field guides which include photographs of the species found here. **The Fishes of Alberta** by M.J. Paetz and J. Nelson, and **The Fishes of Canada** by B. Scott and E.J. Crossman, are excellent references.

In Alberta, a good source of information is the Sam Livingstone Fish Hatchery in Calgary. There you can see many of these fish in an aquarium-like setting and also learn about trout production in Alberta.

Trout



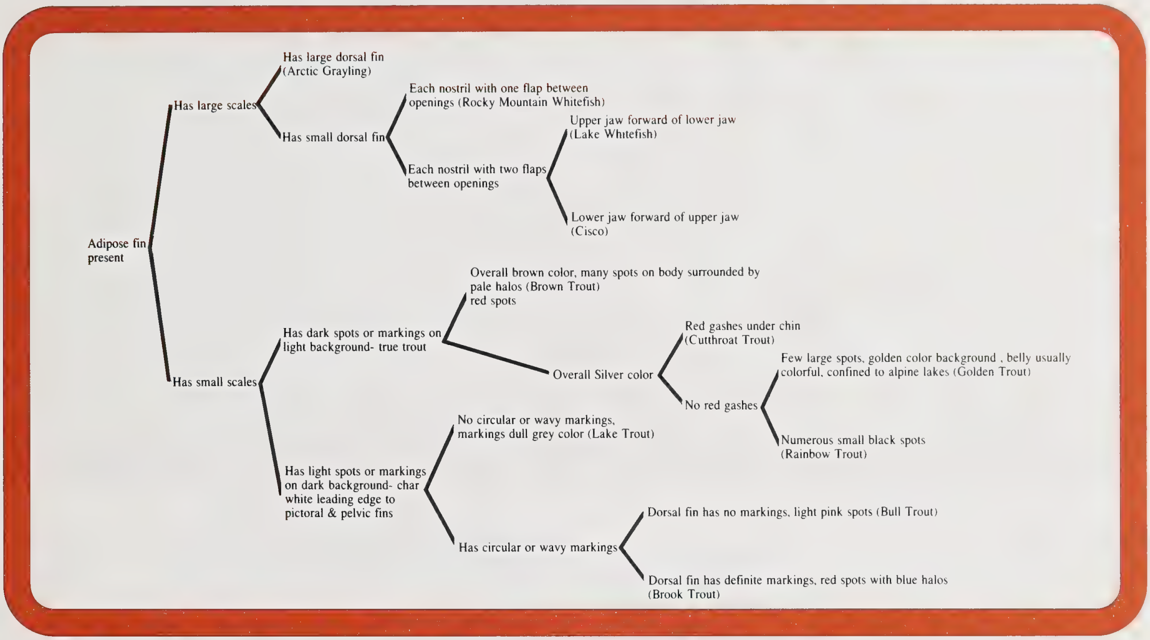
Burbot

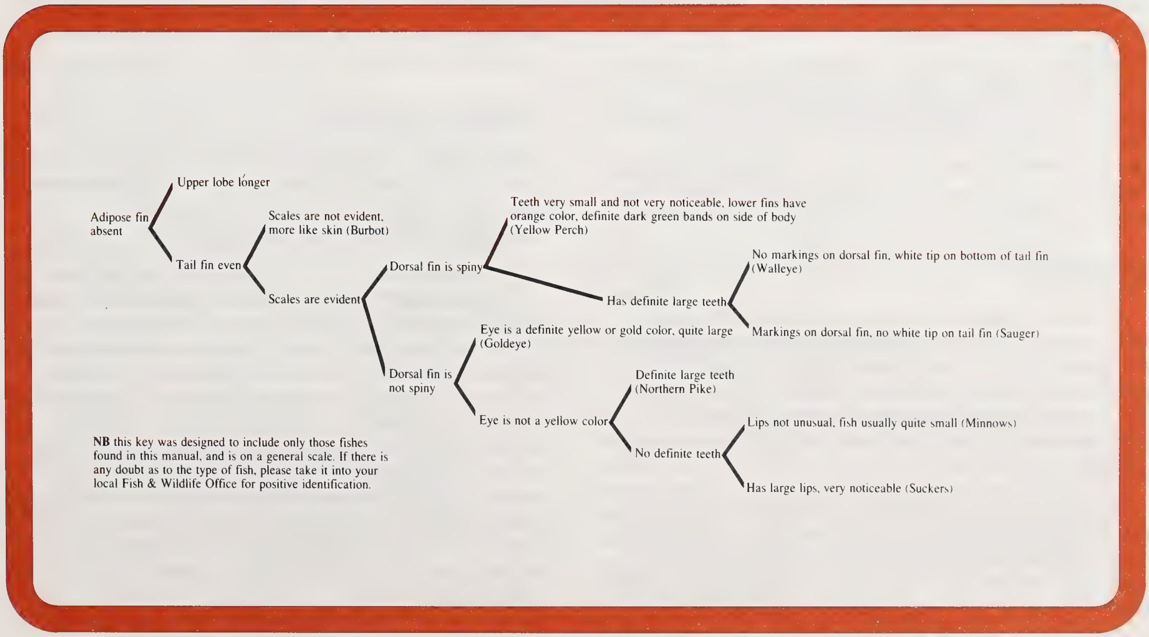


How to Use This Key

Using this identification key is a matter of making a series of choices, until you have narrowed the choices down to the correct species.

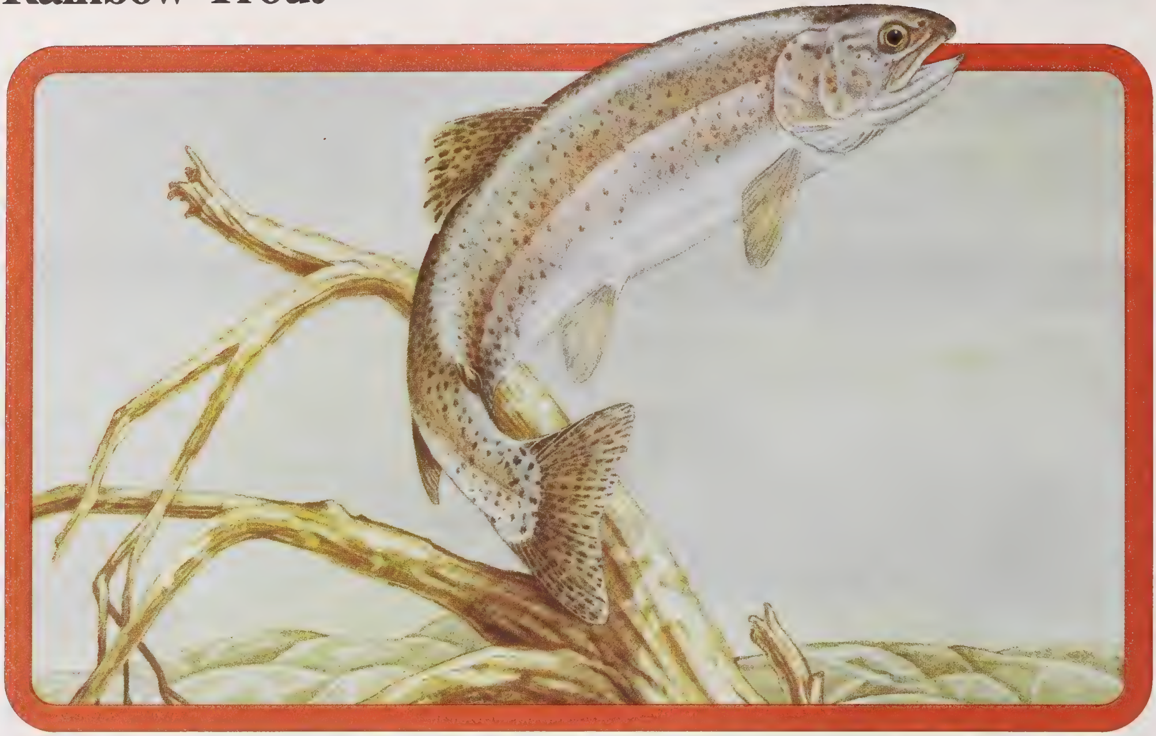
For example: Begin by looking for an adipose fin, the fatty rayless dorsal fin you will see in the illustration. If it is present, follow the first group of questions; if it is absent, follow the second. If the adipose fin is present, check whether the scales are large (greater than .07 cm) or small (less than .02 cm). If the scales are small, the next question about coloring will tell you if the fish is a true trout or a char; further pairs of questions will lead you to the species.


Adipose fin present
Has large scales
Has large dorsal fin (Arctic Grayling)
Has small dorsal fin
Each nostril with one flap between openings (Rocky Mountain Whitefish)
Each nostril with two flaps between openings
Upper jaw forward of lower jaw (Lake Whitefish)
Lower jaw forward of upper jaw (Cisco)
Has small scales
Has dark spots or markings on light background- true trout
Overall brown color, many spots on body surrounded by pale halos (Brown Trout) red spots
Overall Silver color
Red gashes under chin (Cutthroat Trout)
No red gashes
Few large spots, golden color background , belly usually colorful, confined to alpine lakes (Golden Trout)
Numerous small black spots (Rainbow Trout)
Has light spots or markings on dark background- char white leading edge to pictoral & pelvic fins
No circular or wavy markings, markings dull grey color (Lake Trout)
Has circular or wavy markings
Dorsal fin has no markings, light pink spots (Bull Trout)
Dorsal fin has definite markings, red spots with blue halos (Brook Trout)


Adipose fin absent
Upper lobe longer
Tail fin even
Scales are not evident, more like skin (Burbot)
Scales are evident
Dorsal fin is spiny
Teeth very small and not very noticeable, lower fins have orange color, definite dark green bands on side of body (Yellow Perch)
Has definite large teeth
No markings on dorsal fin, white tip on bottom of tail fin (Walleye)
Markings on dorsal fin, no white tip on tail fin (Sauger)
Dorsal fin is not spiny
Eye is a definite yellow or gold color, quite large (Goldeye)
Eye is not a yellow color
Definite large teeth (Northern Pike)
No definite teeth
Lips not unusual, fish usually quite small (Minnows)
Has large lips, very noticeable (Suckers)

NB this key was designed to include only those fishes found in this manual, and is on a general scale. If there is any doubt as to the type of fish, please take it into your local Fish & Wildlife Office for positive identification.

Rainbow Trout



Identification

The rainbow trout is the best known of the trout group in Alberta. This fish is silver-colored with black spots over its body, dorsal and caudal fins. There is a distinctive "rainbow" band along the side of the body that becomes more prominent in spawning fish. The average weight is under 1 kg, but rainbow trout over 9 kg have been taken in Alberta.

Rainbow trout are native to the Athabasca River system, although their range has been extended throughout the foothills and into "pothole-type" lakes through extensive stocking programs. The Bow River, downstream from Calgary, is regarded as one of the best rainbow trout streams in the world.

Spawning

Spawning occurs in streams from mid-April to late June, primarily in areas where the bottom is composed of fine gravel in a riffle area below a pool. In lake populations, spawning occurs in tributary streams where there is suitable gravel bottoms. The rainbow migrate from lakes and large rivers to smaller streams for spawning.

During spawning, the males are aggressive and very active. The female digs a nest and the eggs are fertilized as they are deposited in the nest. Upon completion of spawning, the female covers the eggs with gravel. In many stocked lakes no spawning habitat is available, so no spawning takes place. In these lakes, periodic stocking is required to replenish the population.

Feeding Habits

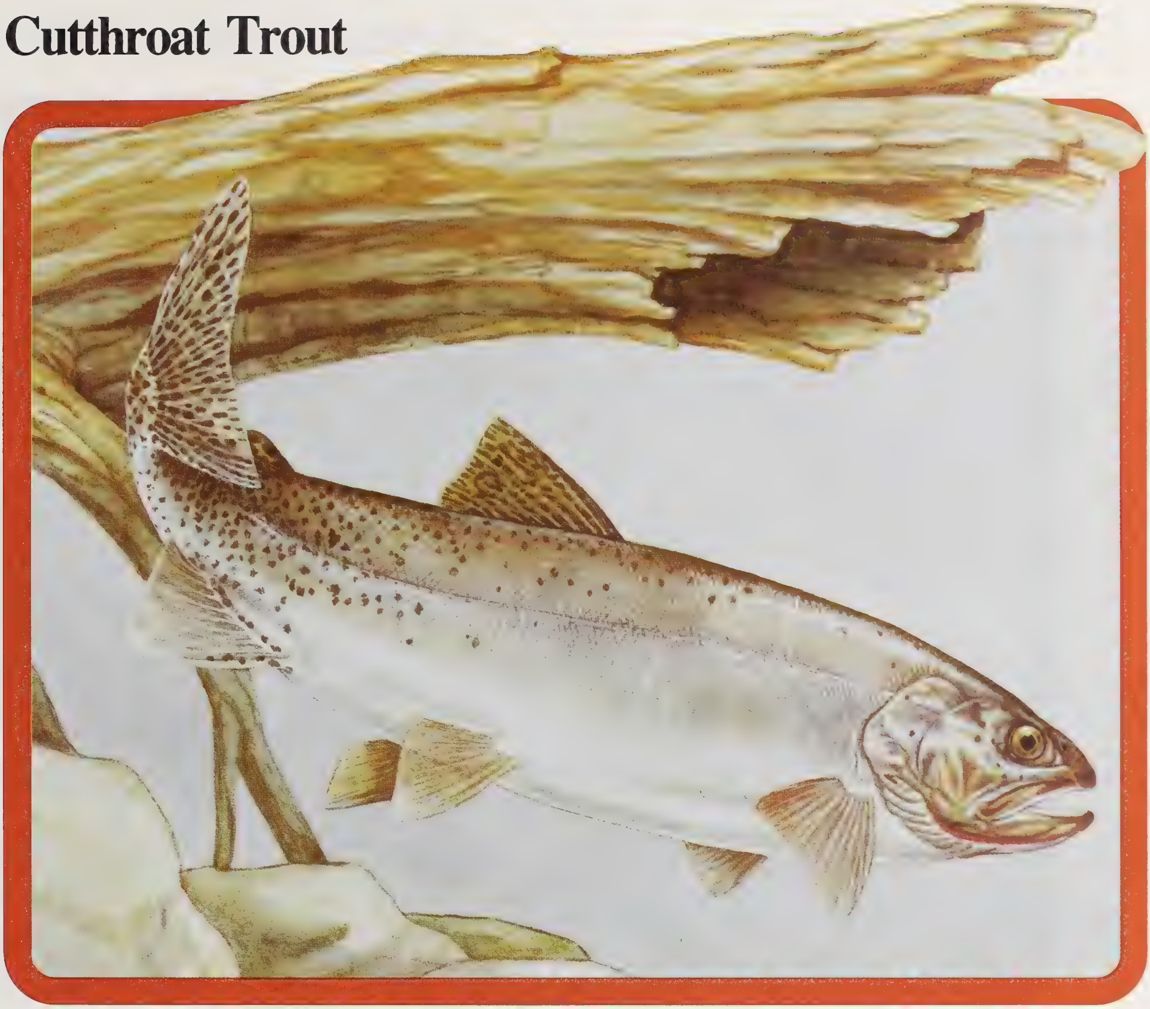
The rainbow feeds primarily on underwater invertebrates but will feed on the surface, particularly when mayflies and caddisflies hatch. It will also feed on small fish and fish eggs.

Angling Techniques

The rainbow is the most popular trout caught in Alberta. This is primarily because of its wide distribution throughout southern and central Alberta, and the accessibility of these areas to fishermen.

There are as many ways to catch rainbow trout as there are fishing methods. Broadly speaking, rainbow are taken with all types of bait and lures, from trolling spoons to corn or marshmallows. Many methods are only of local importance however, and most anglers seeking rainbow use either fly casting or spinning equipment. Fishing methods are dictated by the trout's preferred food and habitat. Fly fishing in lakes, for example, is usually more productive where insects are the dominant food. The rainbow is a strong fighter, leaping out of the water in an attempt to be rid of the angler's hook. Ice fishing for rainbows is also popular. Usually a bait of worms, maggots, corn or marshmallows is suspended 10 to 20 cm off the bottom.

Cutthroat Trout



Identification

Cutthroat trout are named for the bright red-orange streak in the fold under the mouth. The cutthroat trout opens its mouth and flashes the red streak at fish it wants to drive away.

These trout are native to the mountain and foothill streams of southern Alberta. They have been introduced into the Ram River west of Red Deer, and a few other small cold streams tributary to the North Saskatchewan River. Cutthroat prefer colder waters than do the closely related rainbow trout.

Spawning

Spawning takes place in the late spring in small tributary streams, in a gravel-covered bottom. A nest up to 12 cm deep is dug by the female with her tail. Each cutthroat may spawn more than once, and with different partners. Aggression is shown by both male and female if other fish try to spawn too close to their spawning area. Once spawning has been completed, the female will use her body and tail to displace gravel upstream of her nest to cover it. Spawning will occur during the day or night. The eggs will hatch in about five weeks.

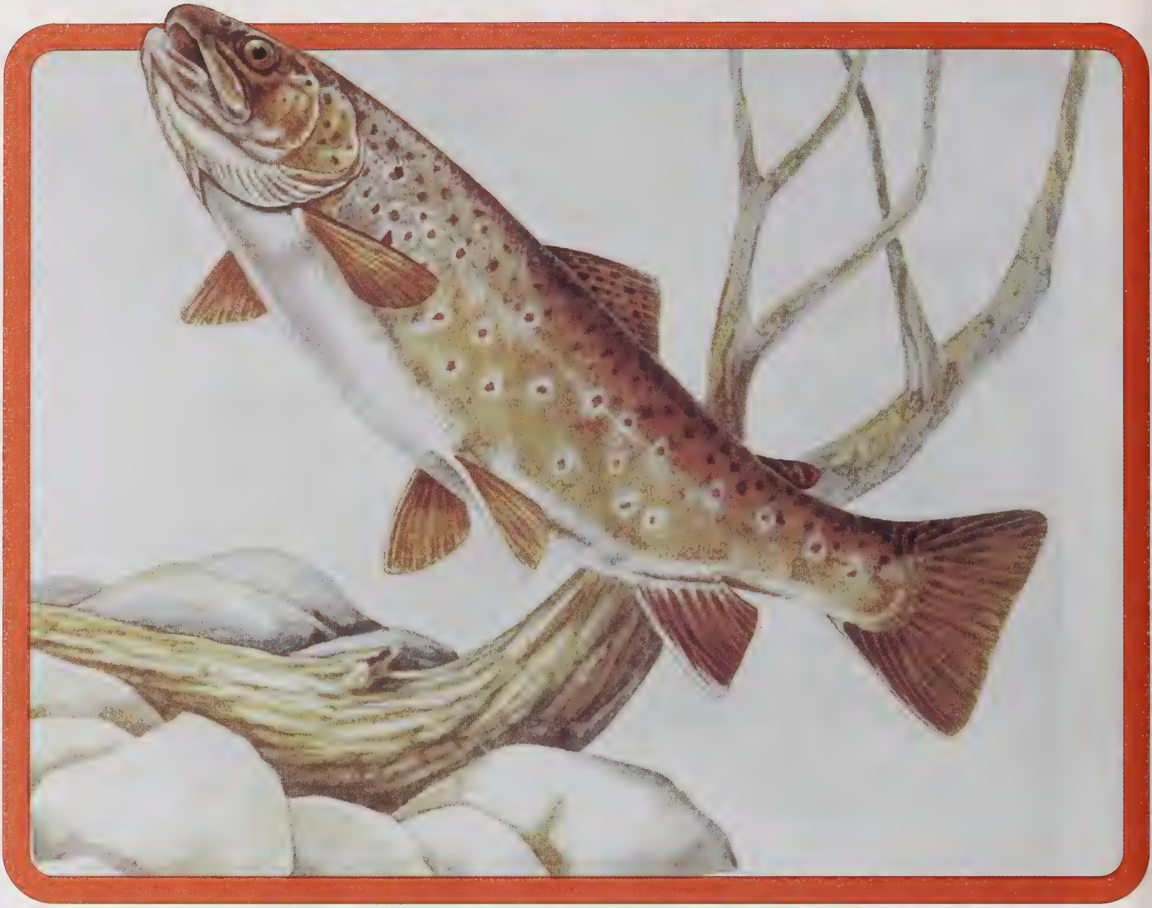
Feeding Habits

Cutthroat trout will feed on aquatic and terrestrial insects, either on the stream or lake bottom or on the water's surface. They will also feed on smaller fish, when available.

Angling Techniques

The cutthroat trout is not considered as active a game fish as the rainbow or brown; it seldom jumps when hooked. However, it is an excellent quarry in its native habitat, being both beautiful and shy. Cutthroat rise freely to dry flies and often require fine leaders and small fly patterns for successful fishing. These trout are also taken on nymphs, wet flies, bucktails, spinners, spoons, and natural bait such as worms or maggots. A lightweight test line is recommended.

Brown Trout



Identification

Brown trout are golden brown in color with large black spots, and red spots, some with pale halos. They are the only trout with both red and black spotting.

This fish is native to Europe, Asia and North Africa. Brown trout were introduced into Alberta waters in 1924. They are now fairly common in slow streams along the foothills. The Bow River and some tributaries of the Red Deer River have become important sport fishing areas for this species.

Brown trout are more tolerant of silting and warm water than the native trout of Alberta. They are also more wary and harder to catch than other species. Brown trout are stocked in areas that have been disturbed by man and where there is heavy fishing pressure.

Spawning

Spawning occurs in October and early November (this is the only true trout in Alberta that does spawn in the fall) in shallow gravel areas. The female digs a shallow depression with her tail, in which the eggs are deposited. Once the spawning act is completed, she covers the eggs with gravel. The eggs hatch the following April.

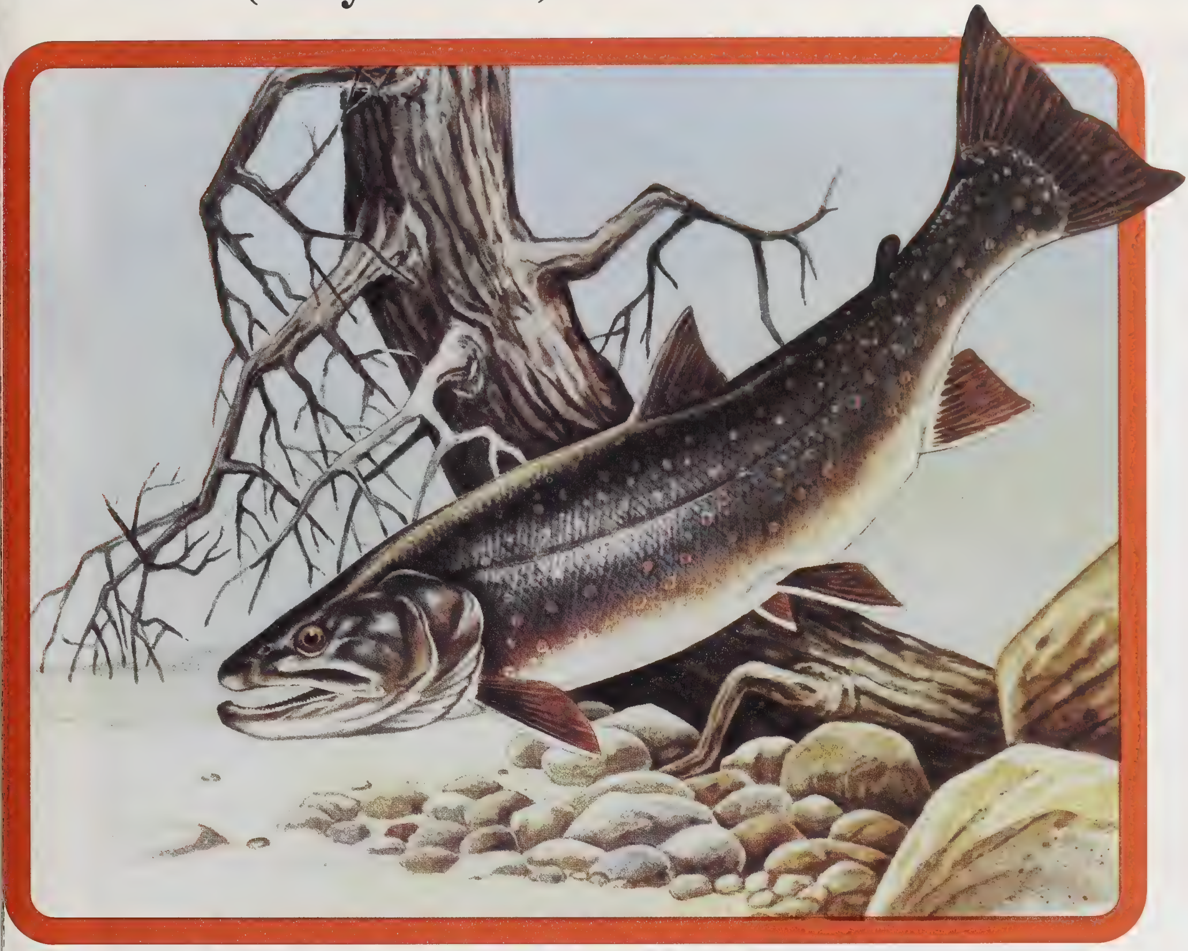
Feeding Habits

The brown trout is highly territorial and will drive other species away from good cover. It feeds on many different varieties of invertebrates and small fish, both on the bottom and on the surface. The brown will forage freely on the surface when mayflies, caddisflies and stoneflies are emerging.

Angling Techniques

Bait, spoons and spinners have all proven effective in taking browns. However, for many anglers the ultimate sport is taking this species on a fly. The brown are inherently cautious, and the fly fisherman must be skillful and understand the trout before he can consistently catch the brown. The brown is most active at dawn and dusk, and some of the larger trout are caught after dark.

Bull Trout (Dolly Varden)



Identification

The bull trout, also known as dolly varden, is a member of the char family. Its back is green to blue-grey, with silvery sides. It has yellow, orange or red spots on its sides, and the pelvic pectoral and anal fins have a white leading edge. In many areas, these fish may weigh up to 12 kg.

Native to Alberta, bull trout occur in most of the mountain creeks and rivers. In some of the more inaccessible areas, bull trout may be the only species of trout present. They may also be found in some of the mountain lakes.

Spawning

These trout spawn in October during daylight hours, in an area with moderate stream current and good-sized gravel. Using her tail, the female digs a nest that may be up to 30 cm deep. She is usually attended by more than one male. Once spawning has been completed, the female covers the nest by loosening gravel upstream and letting the current wash it over the nest containing the fertilized eggs. After spawning, the adults move into lakes or deeper pools to rest. The eggs hatch the following spring.

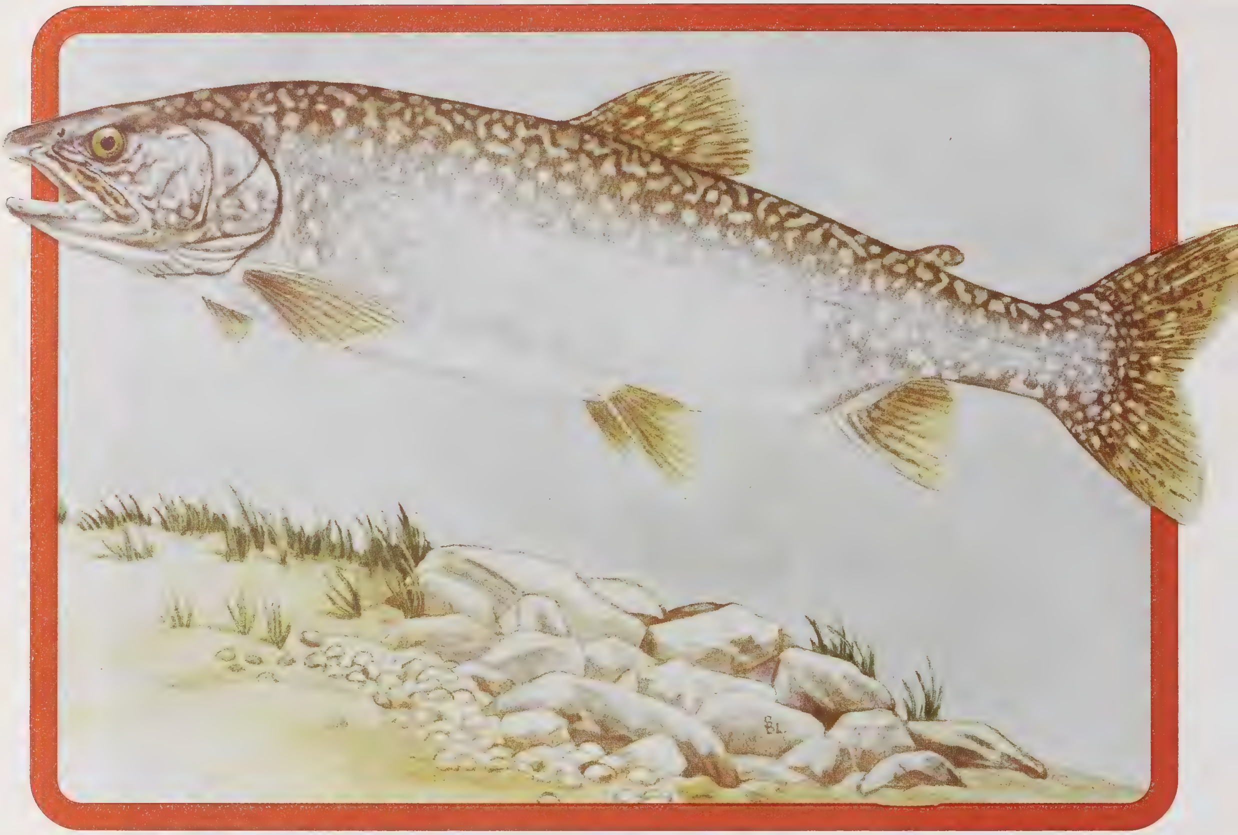
Feeding Habits

Bull trout are aggressive feeders, eating invertebrates and small fish. Because of these feeding habits, and because they live in cold unproductive water they will often be the first fish caught. Most artificial lures will take bull trout, with bait such as worms and stonefly nymphs also working well in some areas. Smaller bull trout seem to respond better to flies than do larger ones.

Angling Techniques

Over the past several years, bull trout have gained more and more acceptance as a sportfish. Before the 1960s, bull trout were regarded as a less desirable trout species and were not sought in areas where other trout were available. Now, however, many anglers enjoy the challenge of catching the larger bull trout. The bull trout is a strong fighter.

Lake Trout



Identification

The lake trout (also called a laker) is the largest member of the char family in Alberta. These trout are olive-green color, with numerous light grey spots on the sides, both above and well below the lateral line. The tail is quite deeply forked. Some fish caught by Alberta anglers have weighed 24 kg.

The lake trout is native to Alberta, although somewhat sparsely distributed because they require a deep cold lake to live in. They are most abundant in the extreme northeastern section of the province, in the deep, cold lakes of the Precambrian Shield. Other locations, such as Cold Lake and the Waterton Lakes, and a few lakes in west-central Alberta also hold lakers.

Lake trout grow very slowly; however, they grow to a very large size often exceeding 10 kg. Lake trout have a life span up to 35 years.

Feeding Habits

Young lake trout feed on freshwater shrimp and other aquatic invertebrates. Larger lake trout are usually predators, and eat other species of fish, mostly whitefish and tullibee.

Spawning

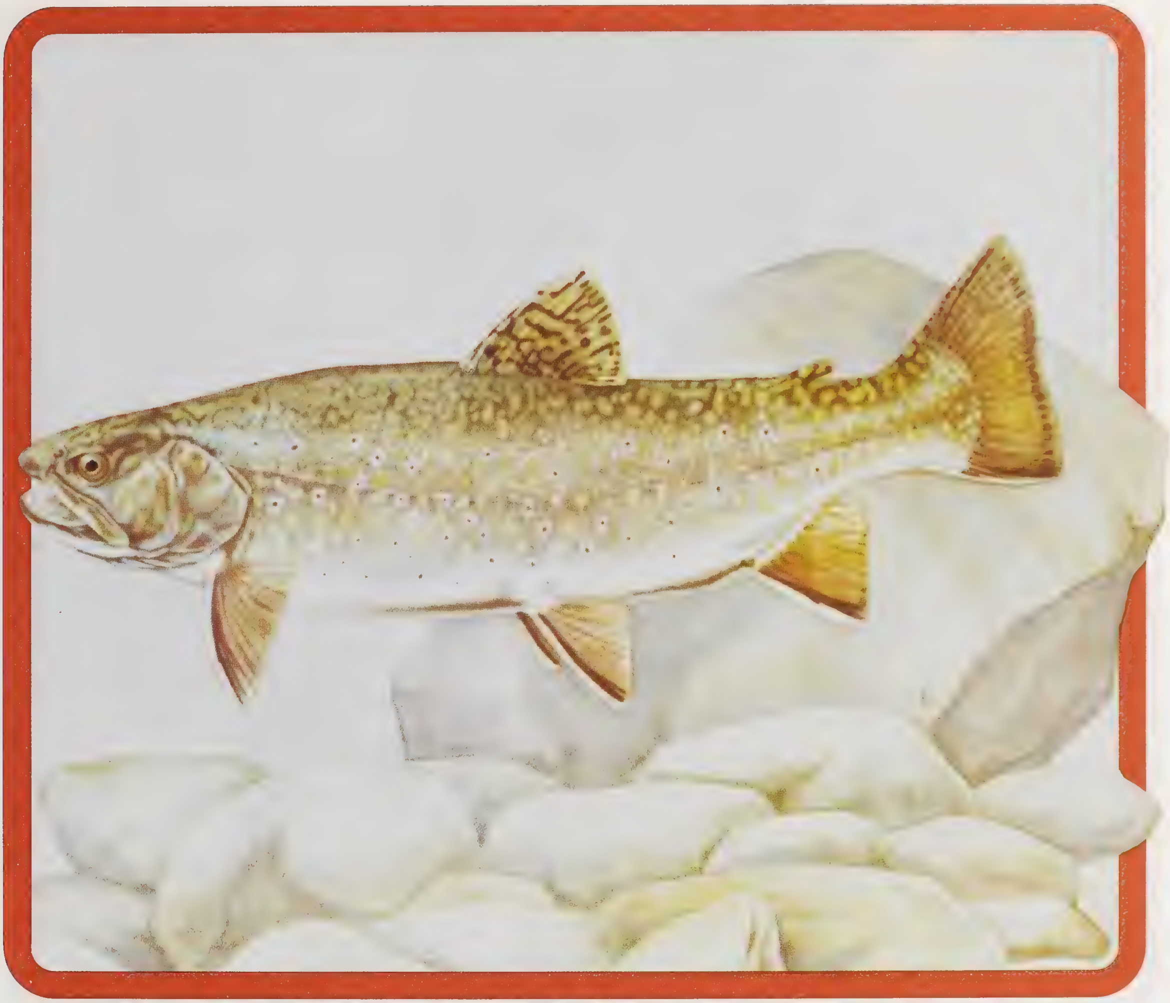
Lake trout spawn in September in the lake. A single male may accompany a single female or several may spawn as a group. Eggs are quite large (5 to 6 mm in diameter) and are spread over a boulder or gravel bed or larger rocks; they are fertilized as they fall between the rocks. Hatching may require up to six months. This usually occurs in water less than 12 m deep.

Angling Techniques

In early spring and fall, lake trout frequent shallow areas. When the water is fairly uniform in temperature, they can generally be found at all depths. As upper water temperatures increase in summer, lakers seek cooler, well-oxygenated levels deeper in the lakes. Lake trout prefer water temperatures of 10°C or less. As a result, the best fishing for this species is in the early spring right after ice out or in the late fall when the surface water is cold.

The lake trout are a prized game fish, and may be taken by fly casting, spin or bait casting. Streamer flies, spoons, spinners and plugs are effective lures. The most common method is by trolling with large spoons. Lake trout are extremely sensitive to water temperature and some local knowledge of the area being fished is a great advantage.

Brook Trout



Identification

The brook trout is one of the most colorful of the trout species. The back is dark green with pale wavy lines. The sides are a purple sheen with blue-haloed red spots. There are no black spots on this trout. The pectoral, pelvic and anal fins have white leading edges.

Originally native to eastern Canada, the brook trout was introduced into Alberta's waters around 1903. They are now found in many of our foothill streams and are stocked in some "pothole" lakes where the lower concentration of oxygen does not favor other species of trout.

Spawning

The brook trout spawns in October and the eggs hatch in the spring. They can first spawn when they are 18 months old and only 6 cm long. This feature causes many brook trout populations to overcrowd their habitat resulting in individuals becoming stunted in size.

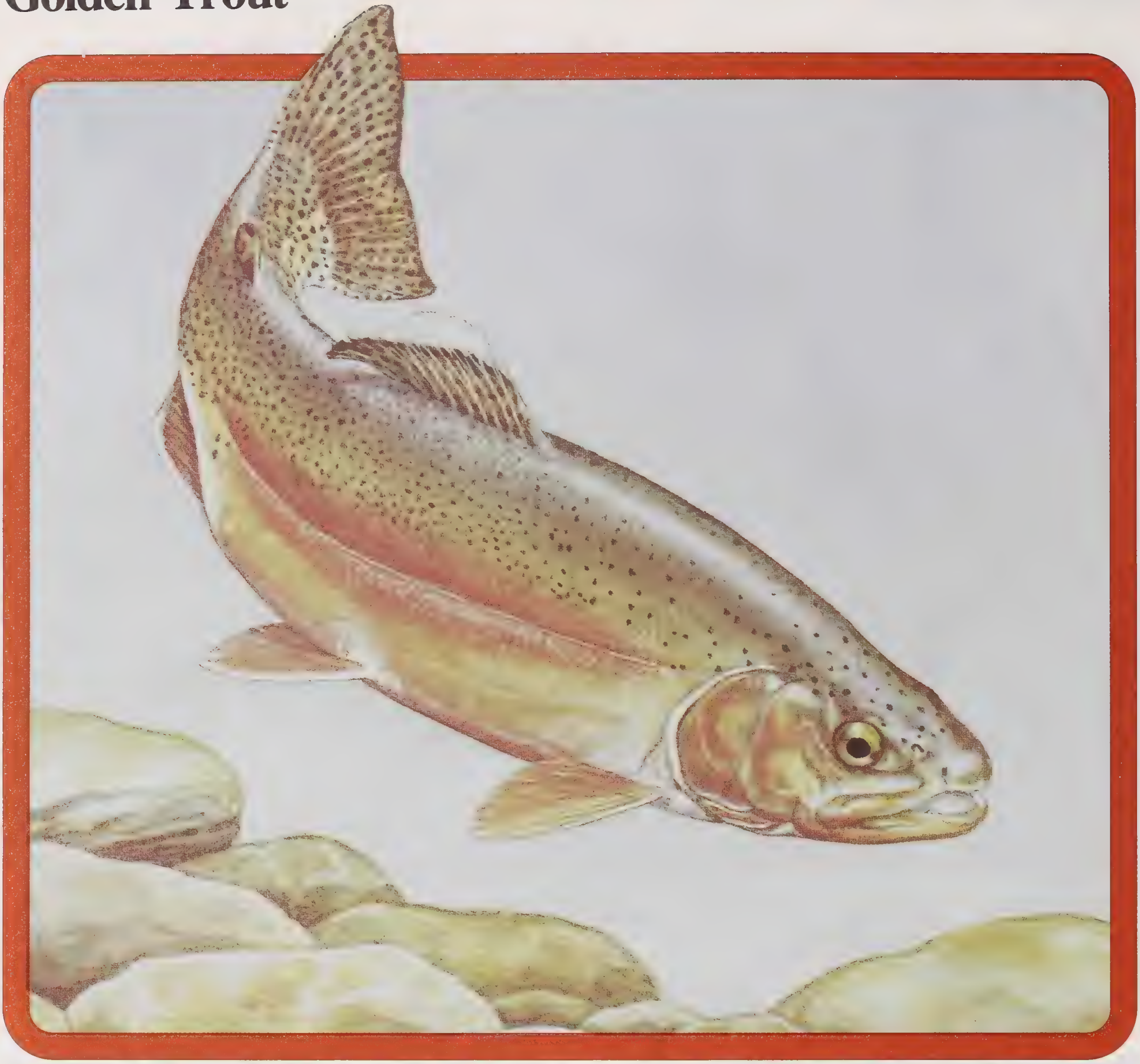
Feeding Habits

The diet of the brook trout is extremely variable, as it includes invertebrates, insects, fish, and mice. Because of this varied diet, many different fishing techniques can take brook trout.

Angling Techniques

Small spinners or spoons are often quite effective, as are both wet and dry flies. Worms also work quite well. To catch brook trout, the lure should be placed close to cover, such as submerged logs or undercut banks. Once the fish has been hooked, it is important to get it into open water, as brook trout are notorious for tangling the angler's line around logs and rocks.

Golden Trout



Identification

This trout has an olive-green back and bright red-to-gold sides and belly. In the spring spawning season, the colors are extremely intense. They are the most colorful of the trout. Golden trout are native only to a few small lakes and streams at high elevations in the Sierra Nevada mountains of California.

In 1959 they were introduced into similar lakes in the mountains of southern Alberta. Golden trout are very specialized for their particular environment, and do not do well in lower elevation streams and lakes.

The short growing season of the high mountain lakes does not allow this trout to grow fast and most golden trout are small. However, they are highly prized by the adventurous angler.

Spawning

Spawning occurs in early July. The golden trout's habits and habitat are similar to those of the cutthroat trout.

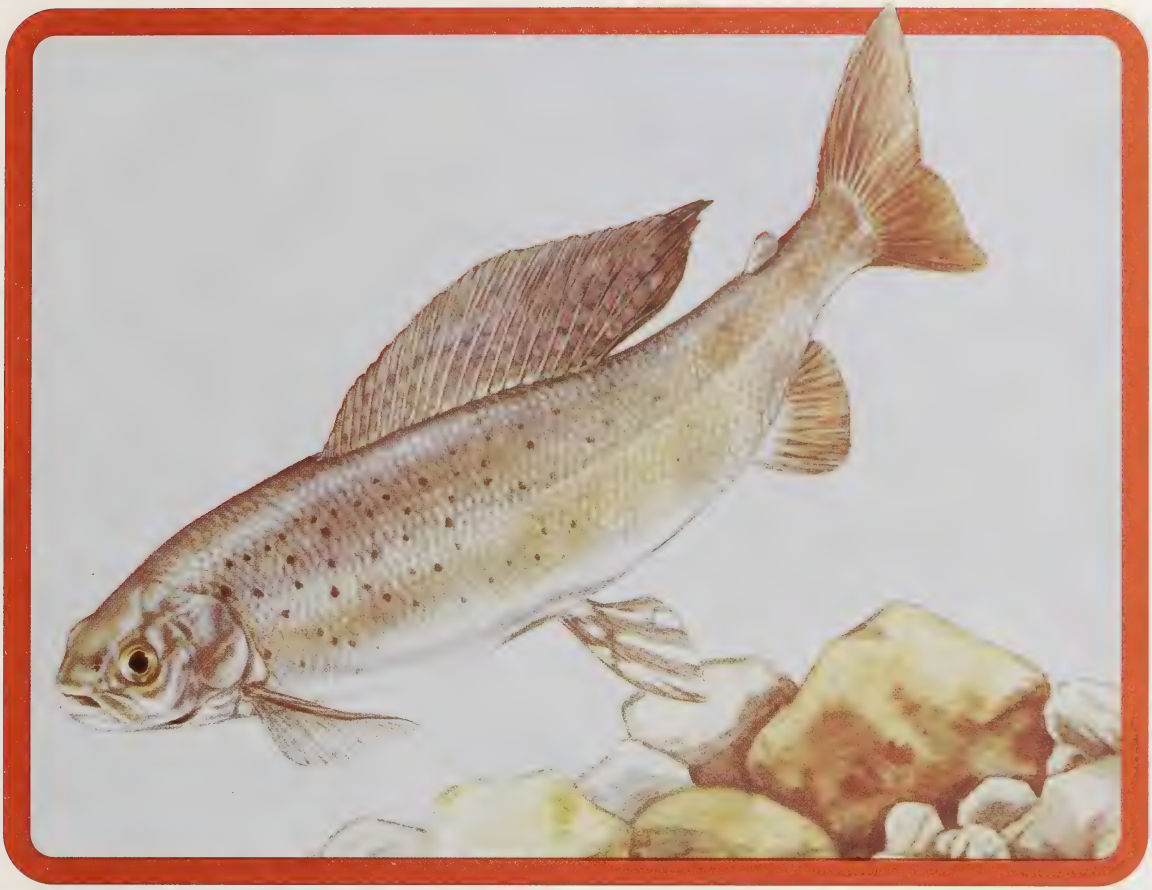
Feeding Habits

Their diet consists mainly of terrestrial and aquatic insects and aquatic invertebrates. Other forms of food may be eaten if available.

Angling Techniques

These trout are caught on spoons and spinners as well as bait such as worms, salmon eggs or maggots. Small dry flies may work well when the fish are visibly rising, and small bucktails or streamers are effective occasionally. Small nymphs which imitate caddis larvae are regularly successful.

Arctic Grayling



Identification

These fish have a colorful and very large dorsal fin, much larger than that of any other cold-water fish. Grayling have large scales with brown or black spots on the body behind the head. They have a black line in the fold under the mouth.

The Arctic grayling is native to North America, and is found primarily in the Athabasca, Hay and Peace River drainage systems. There is also a small population in the Belly River in southwestern Alberta. The grayling is typically found in streams and rivers.

Spawning

Spawning occurs from May to June, depending on the area. Grayling migrate from lakes and larger rivers to smaller streams to spawn. The males on the spawning ground are territorial and will drive away other males when confronted.

The actual spawning act occurs during daylight. Intense quivering by both the male and female, as the eggs and milt are deposited, displaces some of the bottom material and buries some of the fertilized eggs. No actual nest is built. After spawning, grayling return to the lakes and larger rivers. The eggs hatch quickly, 13 to 18 days after being deposited.

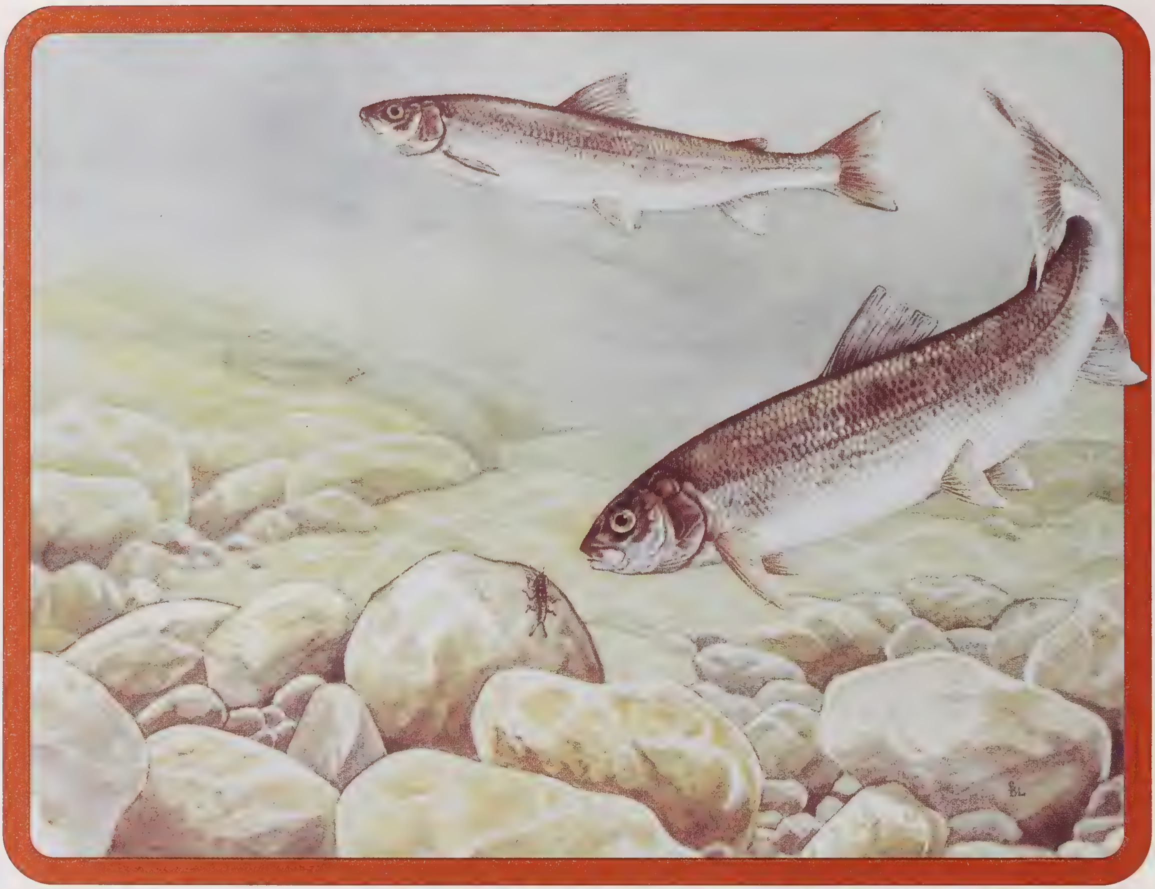
Feeding Habits

The grayling's diet consists of a wide range of both aquatic and terrestrial invertebrates. Fish eggs and small fish may also supplement the diet.

Angling Techniques

A wide variety of angling techniques will take Arctic grayling. Small spoons or spinners are often quite productive, as is the use of natural bait such as worms, maggots or stonefly larvae. The Arctic grayling will also take a wide assortment of flies, both wet and dry. It will feed readily on the surface, and this makes it an attractive sport fish to the dry fly fisherman. Its aggressive fight and tendency to jump out of the water makes it a favorite of many anglers.

Mountain Whitefish



Identification

Mountain whitefish have large scales, no spots and small mouths with no teeth. The general body color is a bronze-white or greenish-white. In Alberta, this fish is often called Rocky Mountain whitefish or (incorrectly) grayling. The latter name is often used in regions where Arctic grayling are not found.

Mountain whitefish are native to most of the waters of western Alberta. They move in large groups or schools from pool to pool. Adult mountain whitefish undertake spawning migrations in the fall and feeding migrations in the spring.

These fish are more flexible in their environmental requirements than other cold-water sport fishes. They have maintained large populations in many streams. Large hydroelectric reservoirs often provide suitable habitat for these fish, and large populations are often present.

Spawning

Spawning takes place over gravel in fairly shallow water in streams. It usually occurs at night in October or November. No nest is built. The eggs and milt are deposited directly on the bottom material. The eggs hatch in early to mid-March.

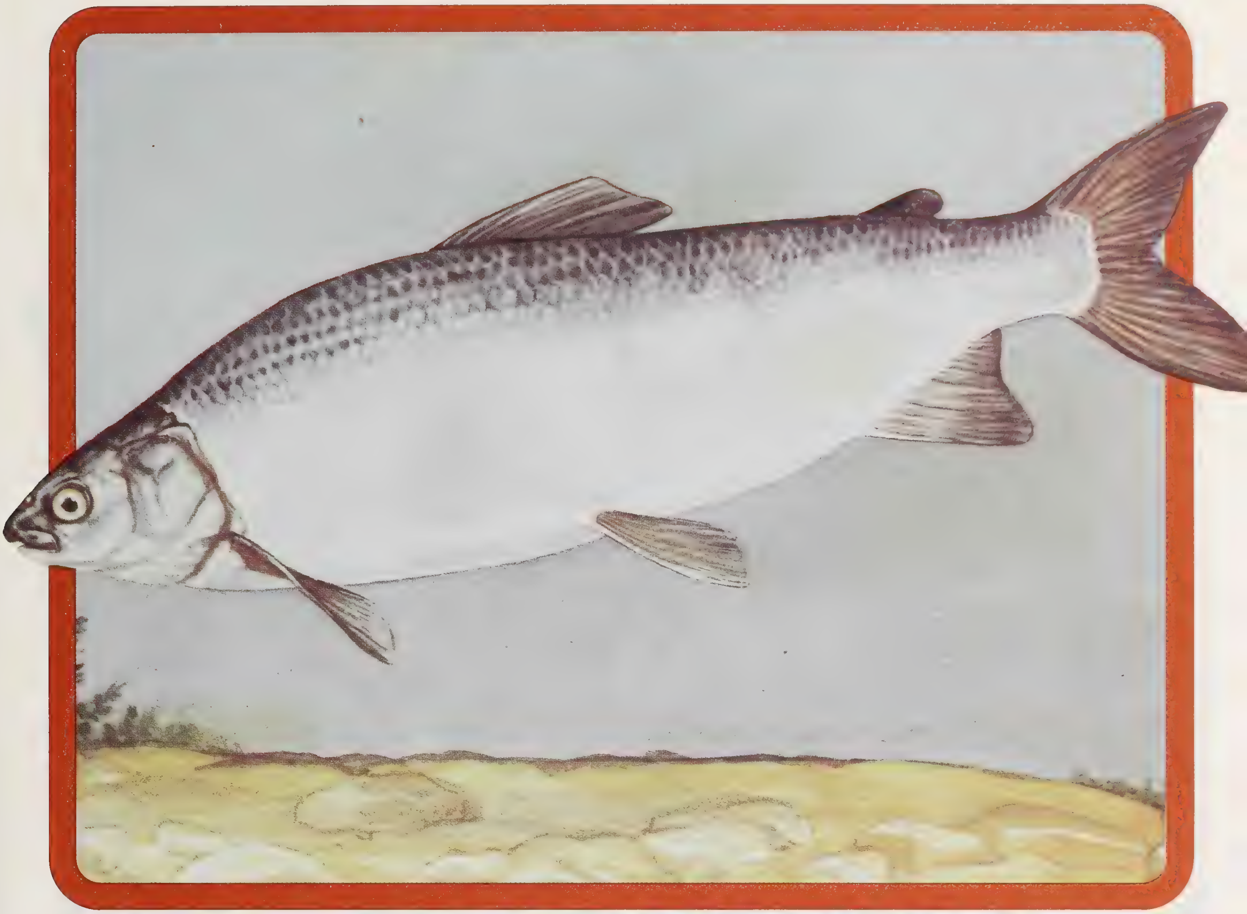
Feeding Habits

Rocky Mountain whitefish feed primarily on bottom-dwelling aquatic insects, but will also feed on terrestrial insects on the surface. They have also been known to feed on fish eggs and other smaller fish.

Angling Techniques

Mountain whitefish provide a reasonable fight if taken on light line. Natural bait, such as worms, maggots or the larvae of bottom-dwelling insects (such as stonefly nymphs) may be quite productive. The most common method of fishing for this species is still fishing. Mountain whitefish will also take both wet and dry flies. Some whitefish are caught through the ice in lakes using a plain baited hook.

Lake Whitefish



Identification

The lake whitefish has an overall silver coloration and no spots. Its back is somewhat darker than the rest of the body. It has large scales, and the upper jaw protrudes over the lower jaw. In Alberta, it can weigh up to 5 kg.

This species is native to Alberta and is found in many locations throughout the province. They are found primarily in lakes, but are also present in the Red Deer and lower Bow Rivers.

Spawning

Spawning usually takes place in October or November, over a stony or sandy bottom in less than 8 m of water. Their eggs are deposited randomly over the spawning area, and remain there until they hatch the following spring.

Feeding Habits

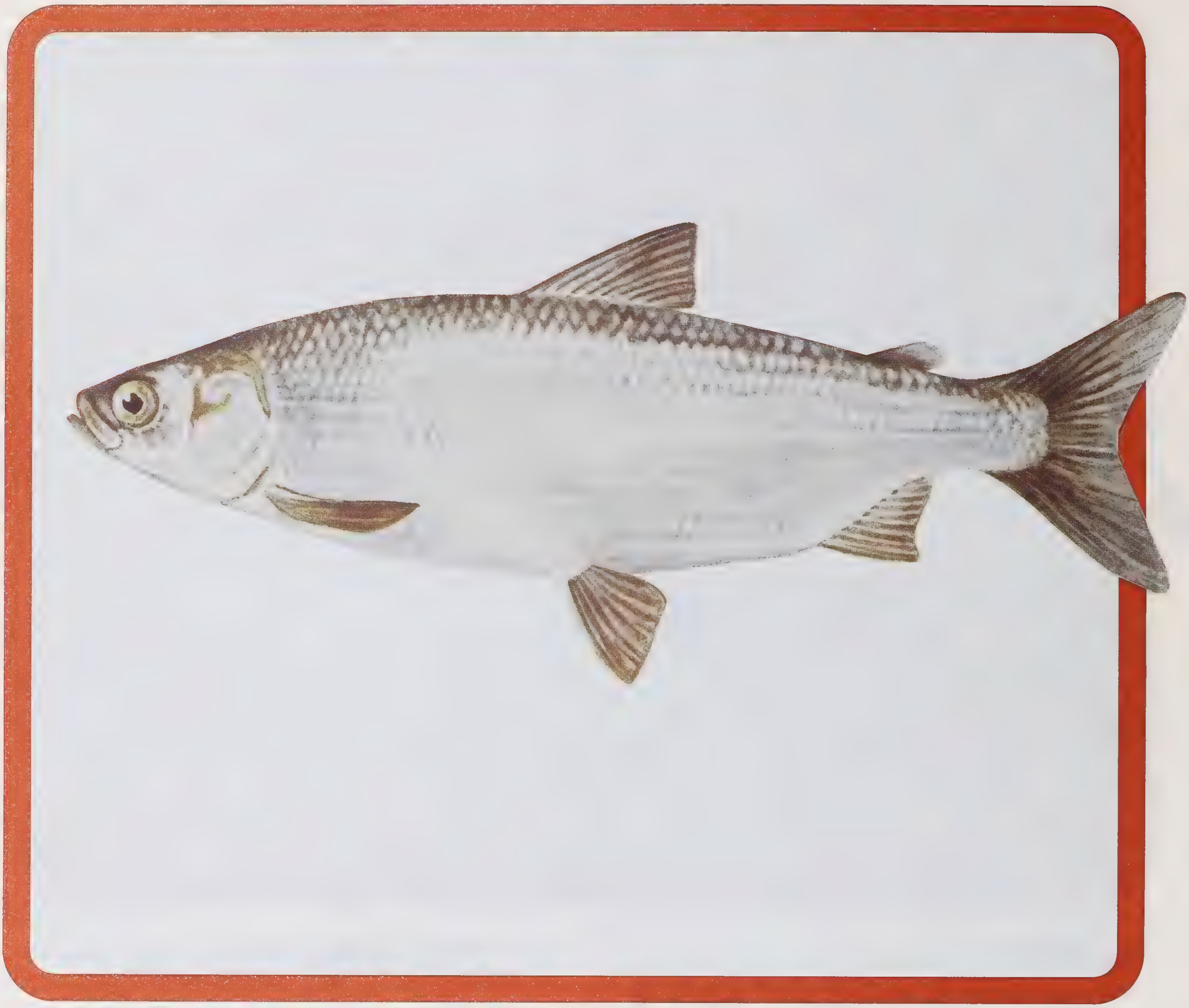
Lake whitefish are primarily bottom feeders. Their diet consists mainly of aquatic invertebrates, but they have also been known to feed on fish eggs and small fish.

Angling Techniques

The lake whitefish has historically been considered a commercial species in Alberta. In fact, it is the single most important species for commercial fishermen in Alberta. Anglers however, now realize its potential as a game fish and have developed methods to take it with hook and line, especially during the winter months.

Lake whitefish are more popular as a sportfish in the winter. Usually fished in water 1 to 3 m deep, a small spoon or Russian hook baited with maggots is most effective. Early morning is the peak feeding period, although feeding activity increases again towards dark. Lake whitefish are particular when feeding, and often a change of lures and much patience is needed to catch them. Either a hand line or a small jigging rod is the most common method of fishing.

Cisco (Tullibee)



Identification

Cisco, also known as tullibee, are silvery-colored with a hue of pink, blue or purple. They look similar to lake whitefish, but are easily distinguished by the lower jaw, which protrudes in front of the upper jaw. The average weight in Alberta is approximately 500 g, but can be as large as 1400 g. It is found in many of the lakes in northern Alberta.

Spawning

Cisco spawn in November or December in shallow water (1 to 3 m deep) on a rubble bottom. The males will arrive on the spawning grounds a few days before the females. After spawning is completed, the males will remain for a few days. Hatching occurs the following April or May.

Feeding Habits

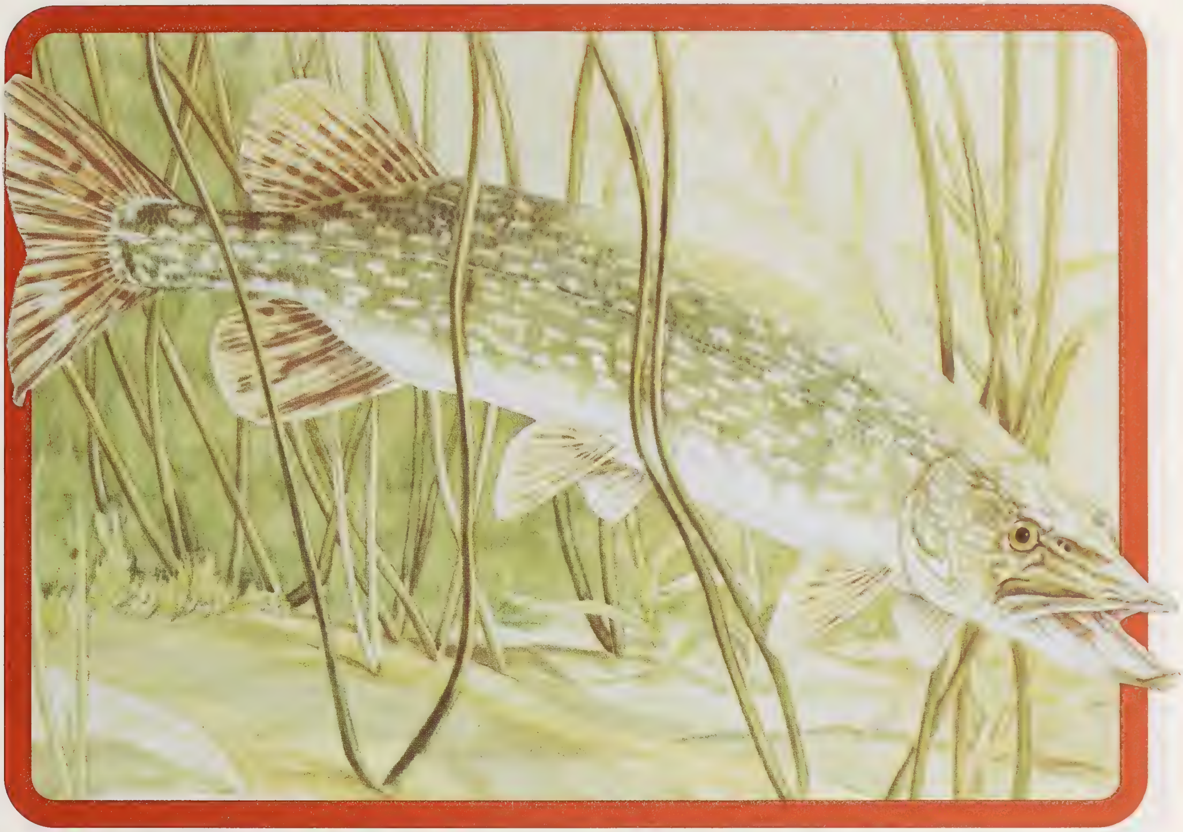
The diet of the cisco is somewhat different from that of the lake whitefish. The primary food source is plankton, although aquatic invertebrates, small minnows and fish eggs will supplement its diet.

Angling Techniques

In some areas, cisco have been caught commercially in large numbers. In Alberta, however, the small size of the fish and the presence of a parasitic worm in the flesh precludes this fish having much commercial value other than as animal food.

As a sportfish, cisco are usually caught as an incidental species when fishing for lake whitefish. The same techniques using small jigs or Russian hooks baited with maggots and fished through the ice in shallow water work well.

Northern Pike



Identification

The northern pike, nicknamed "jackfish", can be easily identified by its long, slender body with light spots on a darker greenish background. The upper part of the fish is dark green, becoming lighter, almost milk-white, along the belly. A prominent feature of the pike is its very large mouth with many teeth, and the dorsal fin located far to the back of the body. In Alberta, pike average 2 kg, but specimens over 17 kg have been taken.

The northern pike is native to Alberta, and is the most abundant and widely distributed of the province's game fish. They occur in streams, lakes and reservoirs throughout the prairies and forested regions, but not in the colder mountain waters.

Spawning

Northern pike spawn in April and early May during daylight. Spawning occurs in shallow, heavily vegetated areas of rivers, marshes and bays of lakes. A larger female is usually attended by one or two smaller males. With each spawning act, between 5 and sixty eggs are laid, and this is repeated many times a day for several days. The eggs are scattered at random and adhere to the vegetation. Fertile eggs will hatch in four or five days. The young pike grow rapidly during their first summer.

Feeding Habits

Northern pike are a predatory fish. They feed primarily on other fish, and are known to eat frogs, mice, young muskrats and ducklings.

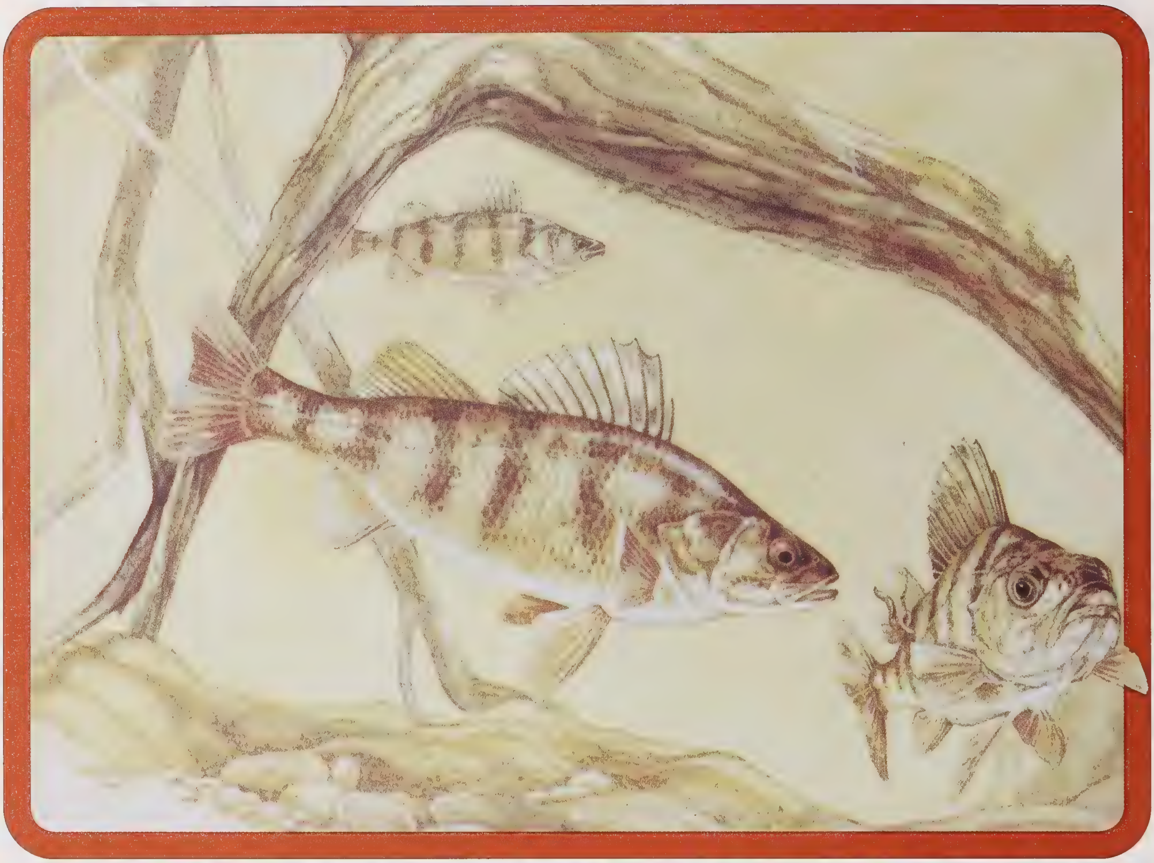
Angling Techniques

Alberta anglers take more pike than any other species, because they are more readily caught and are very widely distributed. Morning is considered one of the better fishing periods as pike are mainly daylight feeders.

Medium and shallow-running lures, jigs or large bait (e.g. smelts) are most generally used and are the most productive. Many types of artificial lures have proven to be very effective.

Many pike are also caught by ice fishermen. Usually, smelts are drifted about 25 cm off the bottom. Jigging a spoon or a large Russian hook is also an effective way of taking pike through the ice.

Yellow Perch



Identification

Yellow perch are a greenish-yellow color down the back, with darker colored bands on their sides. The fins of this warm-water species are typically orange. The first dorsal fin is spiny, and there is a very sharp edge on the gill covering. Yellow perch are small fish, averaging around 250 g, but their size varies from lake to lake. Some lakes are known as producers of "jumbo" perch, that are consistently large, weighing up to 900 g.

Yellow perch are native to Alberta and are common to many lakes throughout the province. They are found almost exclusively in lakes, and are rarely found in moving water.

Spawning

Spawning occurs in late May or early June. Perch prefer shallow lake areas, close to reeds, cattails or fallen trees. Eggs are released during the night or early morning, and each female's eggs are fertilized by many males. Eggs are deposited in long bands of jelly-like material containing numerous eggs. These bands adhere to submerged vegetation or other underwater material, and remain there until the eggs hatch.

Feeding Habits

Yellow perch feed primarily on insect larvae, other invertebrates and small fish. They feed usually during daylight, and will feed constantly if food is abundant.

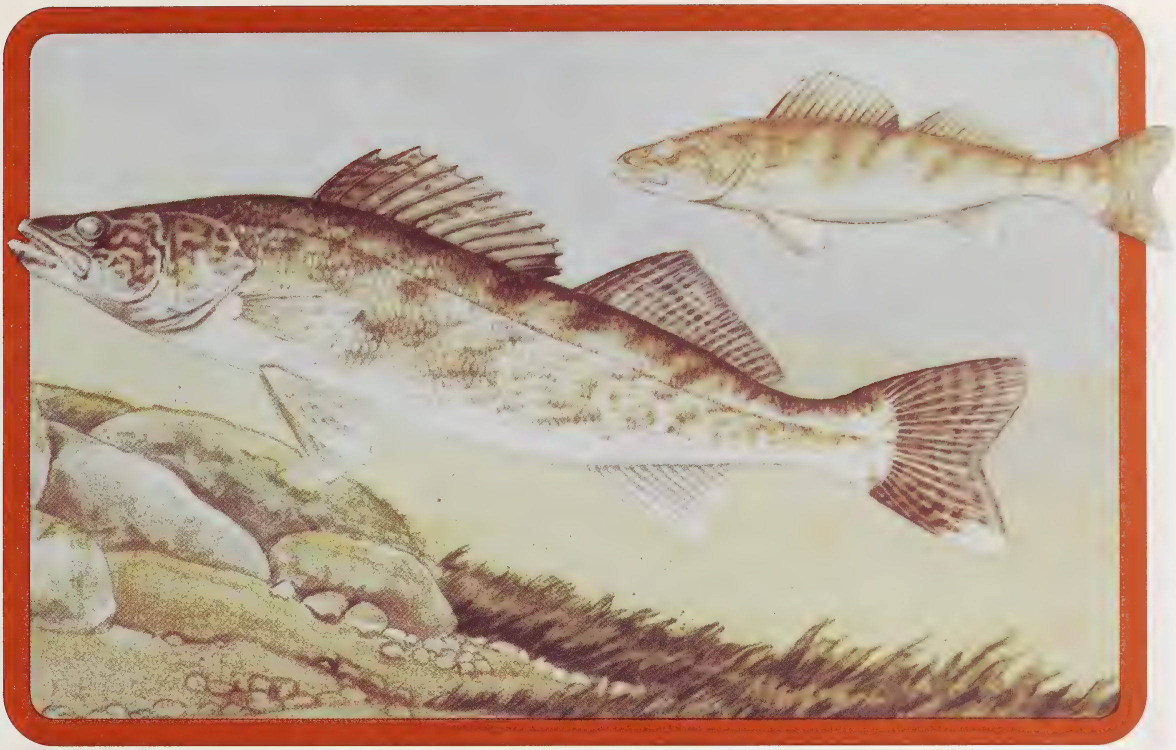
Angling Techniques

Many angling methods can be used to catch perch. Natural bait (minnows, worms, leeches or maggots) often works well, either on the bottom or suspended under a float. Small spinners, small spoons or jigs are also good.

When ice fishing, natural bait on a bare hook, or a baited teardrop or Russian hook have all proven effective. Perch tend to be in fairly deep water (up to 12 m) in the winter, much deeper than when they are in ice-free water.

Although perch are not known for their fighting ability, their large population and readiness to bite make them especially good for young or inexperienced anglers.

Walleye



Identification

The walleye is also known as a "pickerel". It is greenish-yellow on the back, brassy-silver on the sides and whitish on the belly. The fairly large mouth has numerous teeth. It has a double dorsal fin, the first one being spiny, the second one having soft rays. The gill cover has a razor-sharp edge. Two other prominent characteristics are the white tip on the bottom lobe of the tail fin, and the unique glassy appearance of the large eyes. Generally, walleye average 1 kg or less, but will grow up to 6.5 kg.

The walleye is native to Alberta. It is found in various locations in both lakes and rivers. It is absent from the mountains. Walleye tend to prefer slower moving parts of rivers.

Spawning

Spawning takes place in the spring, and during the night. Most occurs in rocky areas below whitewater rapids in rivers; in lakes they prefer boulder or gravel shoals. The males arrive first on the breeding ground, with the females arriving shortly after. The males show some pre-spawning display, primarily pursuing and circling, with one female being attended by one or two smaller males. No nest is prepared; the eggs fall directly on the bottom, lodging in crevices or cracks. The eggs hatch approximately two weeks after being deposited.

Feeding Habits

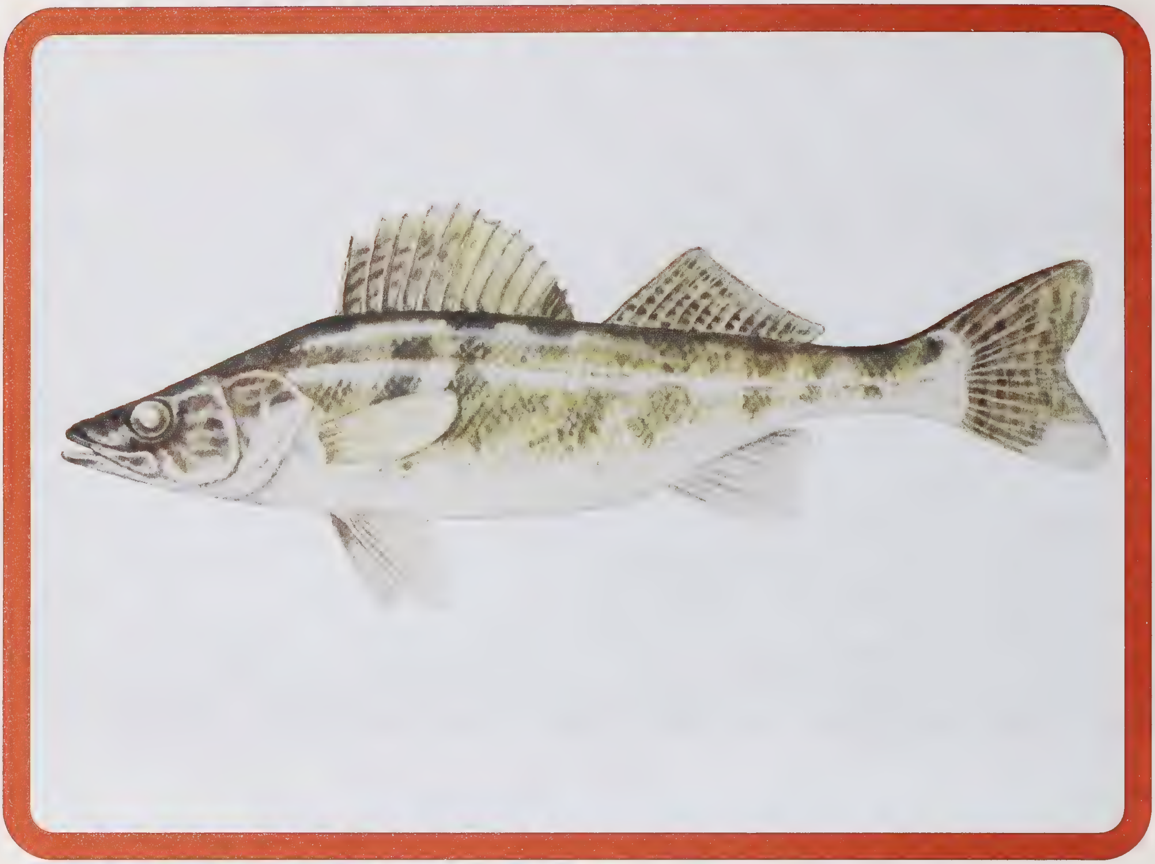
Walleye prefer dim light conditions. They feed primarily at night in shallow water. During the day they move into deeper water where the light is dim.

The diet of the adult walleye consists mainly of aquatic invertebrates and small fish. Walleye are in direct competition with northern pike.

Angling Techniques

Jigs, spinners, spoons or natural bait all work well to catch walleye in certain situations. Remembering these basic facts will help you find success: Walleye tend to congregate in schools; when you catch one it is likely there are others in the same spot or vicinity. Except on rare occasions, walleye are found on the bottom of the lake or river so the odds are with you if you keep your bait on or near the bottom. They are usually found near or on a sandbar or other physical feature which provides a good feeding area in proximity to deeper waters. The primary food of walleye is fish: your bait should resemble a baitfish in some manner, and be slow-moving. Walleye feed primarily in late evening, at night or in the very early morning.

Sauger



Identification

Sauger are often mistaken for walleye, and thus are often also referred to as pickerel. Distinguishing characteristics of the sauger is the presence of numerous black spots on the first dorsal fin. The difference between the sauger and the walleye is that there is a white spot on the lower part of the tail on a walleye. They are smaller than walleye, with the maximum weight being about 2 kg.

In Alberta, the saugers' range is limited to the downstream portions of the North Saskatchewan, Red Deer, Bow, St. Mary and Milk rivers. They prefer the silty water of these streams. In other areas of North America, sauger are usually found in lakes.

Spawning

Sauger spawn in the spring immediately following the walleye spawn. They use the same areas as walleye, and also spawn only at night. Males arrive first at the spawning area, followed by the females. A single female is usually attended by one or more males. The fertilized eggs will fall between rocks or into crevices at the bottom of the stream, as no nest is built. Shortly after spawning has occurred, the females will leave the spawning grounds. The eggs hatch in three to four weeks.

Feeding Habits

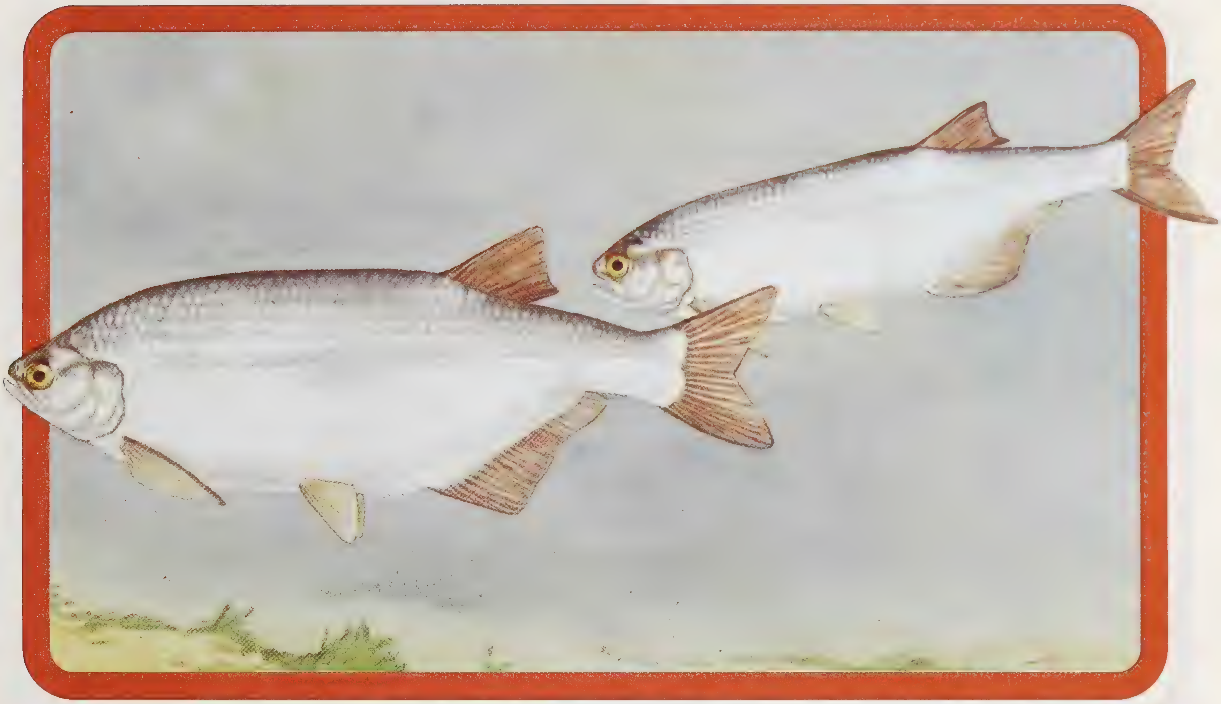
The diet of the sauger is similar to that of the walleye. Aquatic invertebrates and small fish constitute the major portion of its food intake.

Angling Techniques

Because of the similarities between sauger and walleye, most anglers have trouble distinguishing between them. Typically, the sauger is often thought to be a smaller walleye. Owing to its restricted distribution and small size, the sauger is not a major contributor to the province's sport fishery.

Sauger may be taken by brightly-colored spoons or spinners retrieved slowly and close to the bottom. Jigs may also be effective. Bait such as worms or minnows is also productive. On rivers, try fishing in the deep, slower-moving areas.

Goldeye



Identification

The goldeye is a game fish with a bluish-green back, silvery sides and white belly. The body is deep and flat with a deeply-forked tail. Goldeye have large eyes with a prominent yellow iris. The average size is approximately 500 g, but specimens over 2 kg have been taken in Alberta.

Goldeye are native to Alberta, but their distribution is limited to the warm, silty sections of large rivers such as the Peace, Athabasca, North and South Saskatchewan and Red Deer. They are also found in some shallow lakes in the Fort Chipewyan area.

Spawning

Spawning occurs during the high water of spring, in the quieter areas of the rivers. Starting in May, the goldeye spawn may extend well into June. It is believed spawning occurs at night, but little information is available because of the muddiness of the water at this time. Quite often there is a migration upstream before spawning. The eggs are free floating and float downstream for a considerable distance before hatching. Once hatched, the young fish hold their position in slack water areas. Once spawning is completed, the goldeye will slowly move back downstream and winter in deep pools or backwaters. In Alberta, spawning also occurs in some of the shallow lakes in the Fort Chipewyan area.

Growth of goldeye is slow compared to that of other fish. It takes six or seven years to mature.

Feeding Habits

The goldeye's diet is one of great variety and includes insects, snails, frogs and minnows. Either feeding in the water or off the surface, goldeye adapt well to whatever food source is most readily available.

Angling Techniques

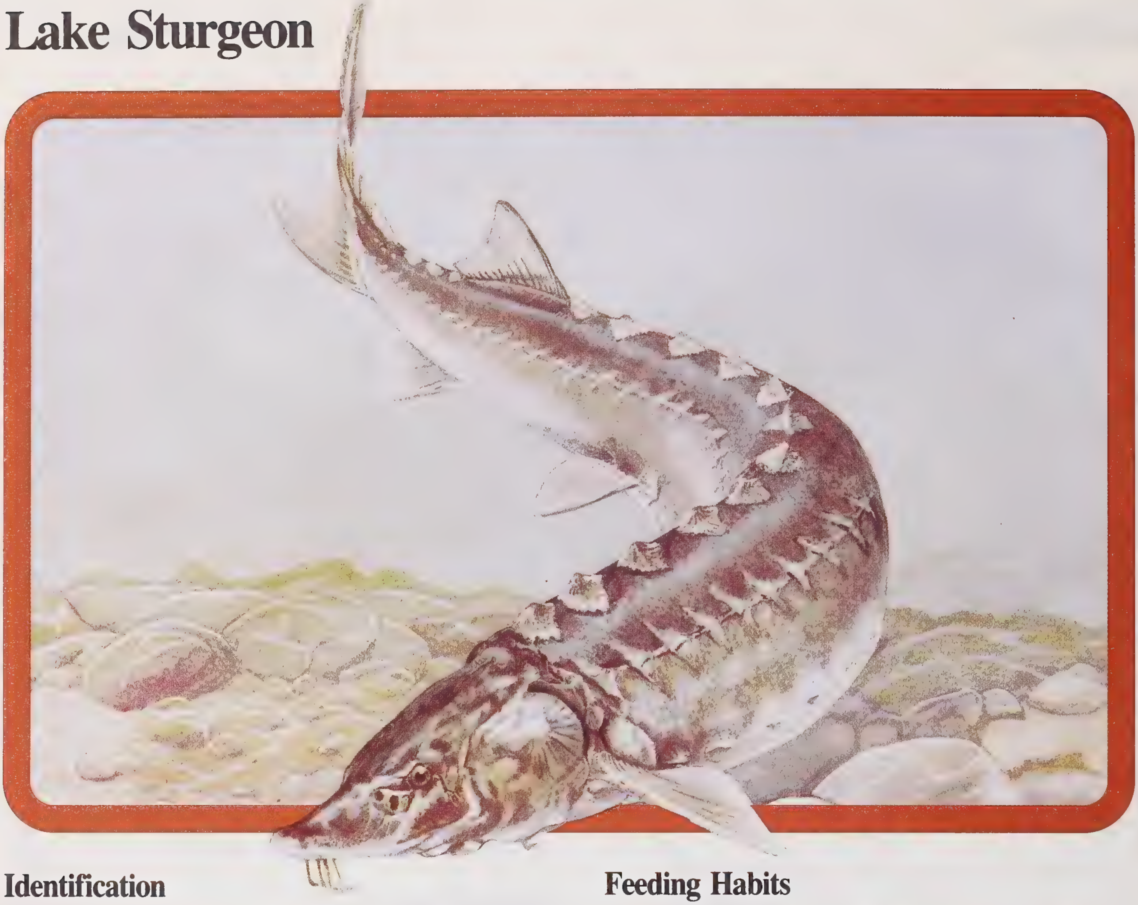
Goldeye are gradually achieving the status of a sought-after game fish. It is not unusual for this fish to leap out of the water in trout-like fashion when hooked on light tackle.

An insect-eater, the goldeye provides excellent fly fishing, as it will readily take both wet and dry flies. Small spoons and spinners will also work well, along with natural bait such as worms or minnows. Late May or June is the best time to catch goldeye.

Goldeye have never been attractive as a food fish. Its flavor is quite bland and has a muddy quality. However, its quality improves tremendously if smoked, which is really the only suitable way to prepare it.

Goldeye from different areas of Canada are caught commercially and sold as a smoked product under the name "Winnipeg Goldeye".

Lake Sturgeon



Identification

The lake sturgeon is the largest fish in Alberta. Its body is olive-grey to dark grey in color, with a whitish color underneath. The upper lobe of its tail is longer and more pointed than the lower lobe. The head has a long snout with the mouth on the underside. There are four barbels (whiskers) in a row just in front of the mouth. There are five rows of hard, bony plates on the body that are unique to this species. Specimens up to 48 kg have been taken in Alberta.

The distribution of this fish is limited to the silty waters of the lower North and South Saskatchewan rivers.

Spawning

Spawning takes place in the spring, in areas of swift water or rapids. Males reach the spawning area first, followed by the females. During spawning time, there is much jumping and splashing. Each spawning female is usually accompanied by one or two males. No nest is built; the eggs, spawned over one or two days, stick to rocks or other bottom material and hatch within eight days.

Lake sturgeon reach maturity at about 10 to 12 years old or about one meter long. Males may reach maturity slightly earlier than females. Individuals can live more than 50 years.

Feeding Habits

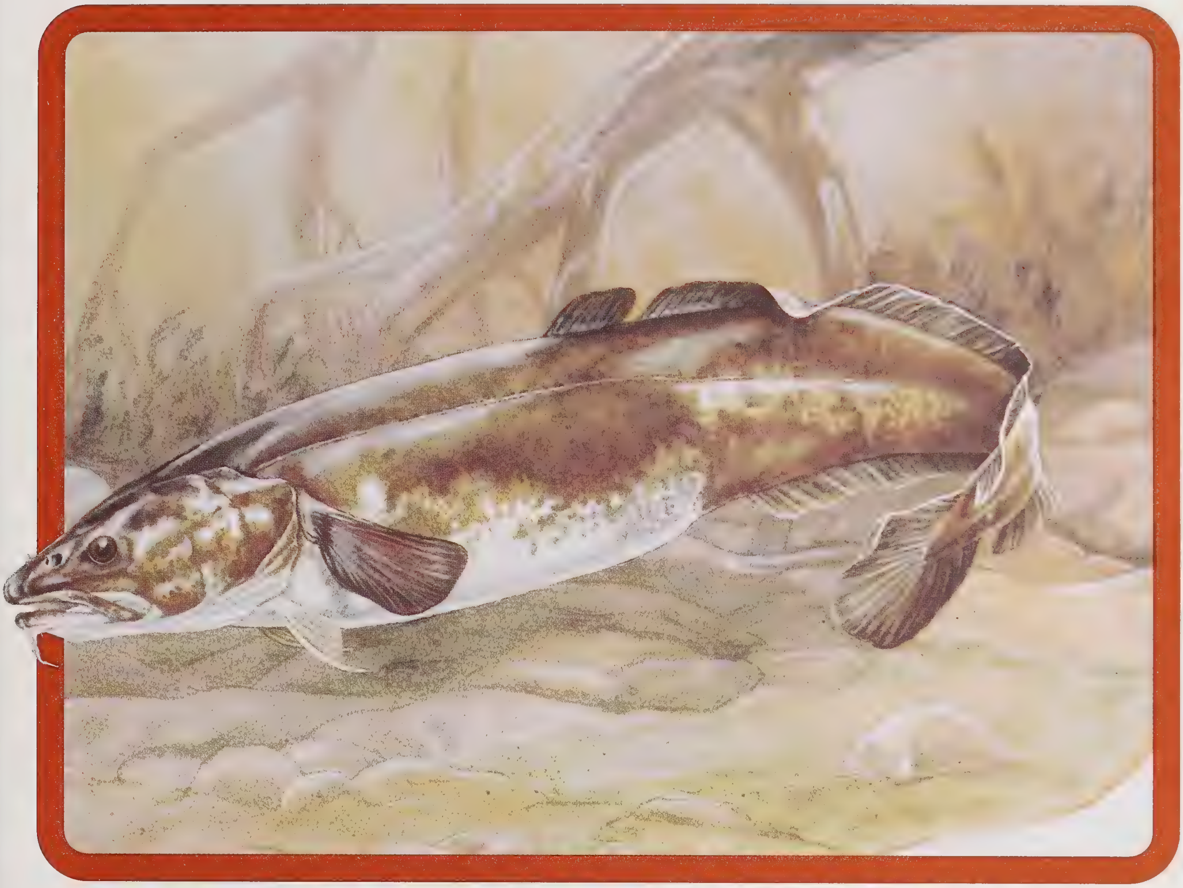
The lake sturgeon will eat virtually anything, ranging from algae and small aquatic invertebrates to small fish. They feed by sucking along the bottom; their barbels act as sensors to tell the fish what is edible and what is not. Feeding ceases during spawning.

Angling Techniques

Sturgeon have suffered tremendously from the effects of civilization. They were almost eliminated from much of their range in eastern North America in the late 1800s because of their value as a luxury food item. Pollution and dam building, along with an inability to reproduce quickly, have led to low population levels over most of their range. There is limited angling opportunity for sturgeon in Alberta. Because sturgeon take so long to reach spawning age and grow so slowly, only a limited number are allowed to be caught annually and a size restriction is in effect. Immature fish under 1 m in length must be released.

Sturgeon are usually fished using bait (either worms, minnows or a chunk of meat) on very heavy line. The bait is held on the bottom with a heavy weight. Deeper pools are favored by sturgeon anglers, and long waits between bites are common.

Burbot (Ling)



Identification

The burbot is also known as ling or freshwater cod. It has a broad, flat head, and a barbel (whisker) hangs from the lower jaw. The long body is mottled along the back and sides, varying from black to tan with a white belly. The scales are inconspicuous. The second dorsal fin is long, usually running close to half the length of the body, and the tail fin is rounded. Maximum length in Alberta is about 80 cm.

This species is widely distributed in Alberta, but is somewhat less common in the mountain regions. It inhabits both lakes and rivers.

Spawning

This native non-game fish is unusual in that it spawns in mid-winter under the ice. In lakes, it spawns in shallow water over a sand or gravel bottom. In rivers, it chooses slightly deeper water, spawning over gravel shoals. Burbot spawn exclusively at night; the spawning grounds are deserted during the day. They spawn in a unique fashion as 10 to 12 fish form a writhing ball approximately 60 cm in diameter. The eggs hatch about a month later.

Feeding Habits

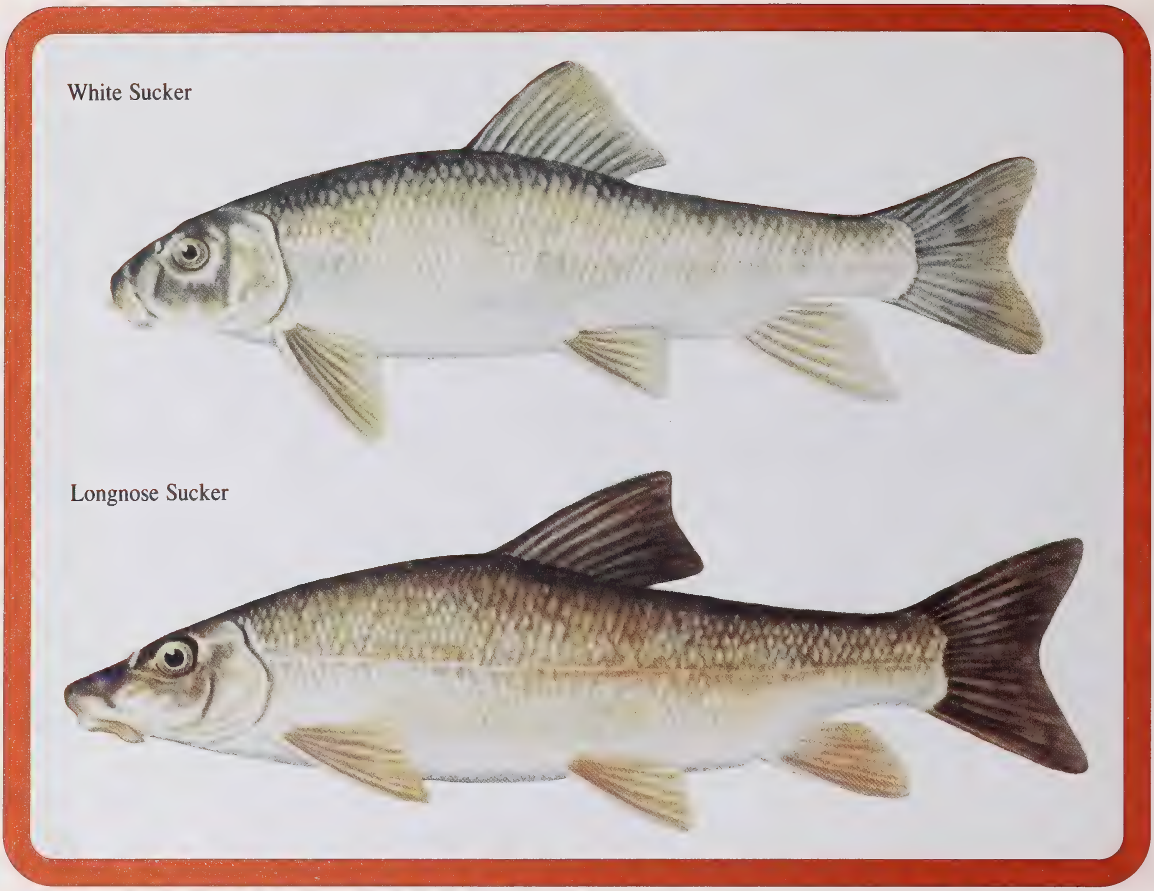
Adults feed almost exclusively on small fish.

Angling Techniques

Burbot are regarded as an undesirable fish and thus have received little recognition as sport fish. However, large numbers of these fish are available in many areas and are easily caught. In spite of their poor reputation, there are possibilities of burbot becoming more popular as a game fish. One of the best techniques for catching burbot is to place a smelt (or other baitfish) or a large worm on the bottom of the lake. If there are burbot in the area, a bite will follow shortly. This method is effective in both open water and through the ice. Burbot have also been known to take small, slow-moving spinners or spoons, as well as baited Russian hooks.

The burbot is considered very unattractive by many fishermen, however, the flesh is very tasty. It is best deep fried in batter, but smoked burbot is also excellent.

The Sucker Family



Identification

There are seven species of suckers in Alberta. These are the quillback, silver redhorse, northern redhorse, longnose sucker, white sucker, largescale sucker and the mountain sucker. Of these, the longnose and white suckers form the bulk of Alberta's sucker population.

The characteristic feature of all suckers is thick, downward-pointing lips. In both the longnose and common sucker, the lip surface is broken by a generous sprinkling of papillae (small pimple-like skin structures). Comparing one with the other, the distinguishing features of the longnose sucker are finer scales on the body, and the extension of the snout well beyond the upper lip. White suckers are fewer in number but larger in size. The snout does not project in front of the lips. It is also a much lighter color than the longnose sucker. Suckers generally reach a maximum weight of 3 kg.

Suckers inhabit the majority of the province's waters, and are found in lakes, rivers and small creeks. They are notably scarce in the swifter, colder mountain streams.

Spawning

Suckers spawn in the spring, and use either creek and river beds or lake shallows. This usually occurs during the day, with a single female attended by two to four males. Spawning of the longnose sucker reaches a peak several days before that of the white sucker.

Feeding Habits

Suckers are primarily bottom feeders, and their diet consists almost entirely of bottom-dwelling invertebrates. Suckers are often blamed for eating the eggs of more desirable species (e.g. trout) but there is little evidence to support this.

Angling Techniques

Suckers are regarded as a trash fish by most anglers. Suckers are taken by some anglers and canned or pickled and are very good eating. They are usually incidental catches to trout, whitefish, walleye or perch. They most often take bait such as worms or maggots which are fished on or near the bottom.

Fishing Techniques and Equipment

Introduction

Any fishing technique which uses a rod, hook and line, or just a hook and line is called angling. Spin casting, bait casting, trolling, fly fishing and ice fishing are all forms of angling, but there are differences in the skills and the species of fish each is used for.

Fishing Rods

The main function of any type of rod is to act as a spring. It must be bent during a cast, to store up energy which is then transmitted to the lure. It is used as a spring in playing and retrieving fish. There are different types of fishing rods for different types of fishing. There are some basic features and characteristics for all of these rods. The basic features are the handle, reel seat, shaft, ferrules and guides. It's characteristics are its casting ability, its performance in playing fish, its sensitivity, comfort and durability.

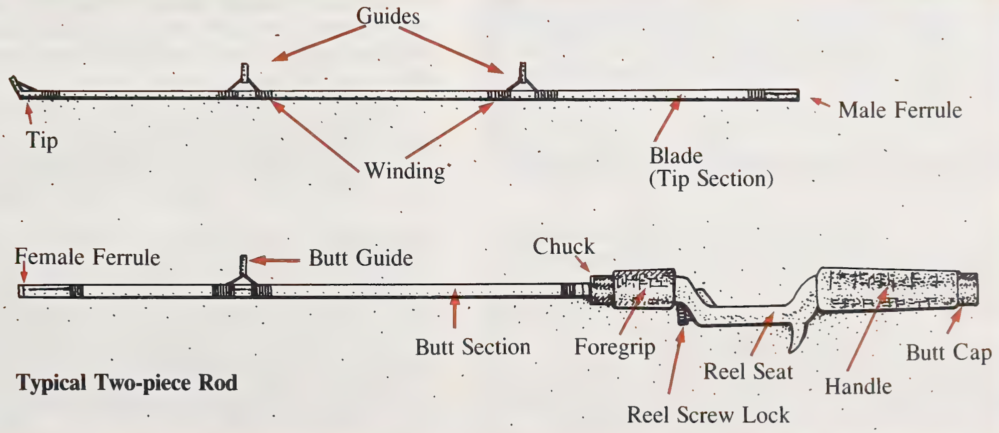
Shafts are most commonly composed of fibreglass, boron or graphite. Most are made of different combinations or composites of these materials, as manufacturers attempt to arrive at a combination which incorporates the best qualities of each material.

Boron is the most sensitive, followed by graphite and fibreglass. Fibreglass is the most rugged, although both boron and graphite are lighter and thinner and therefore more comfortable to use. The handle is usually made of cork or soft material and contains the reel seat. Some reel seats are fixed while others are moveable. The moveable reel seat allows the placement of the reel on the handle to better balance the equipment. The rod's performance is affected by its length, shaft composition and number and location of guides. Rod length varies from one to about four metres (four to 13 feet). The length used is determined by the type of fish, reel type, and line and lure size. Usually, short rods of less than two metres (six feet) are used with light lines and lures and small reels, for catching small fish, while longer rods are used for heavier tackle and for casting lures a longer distance.

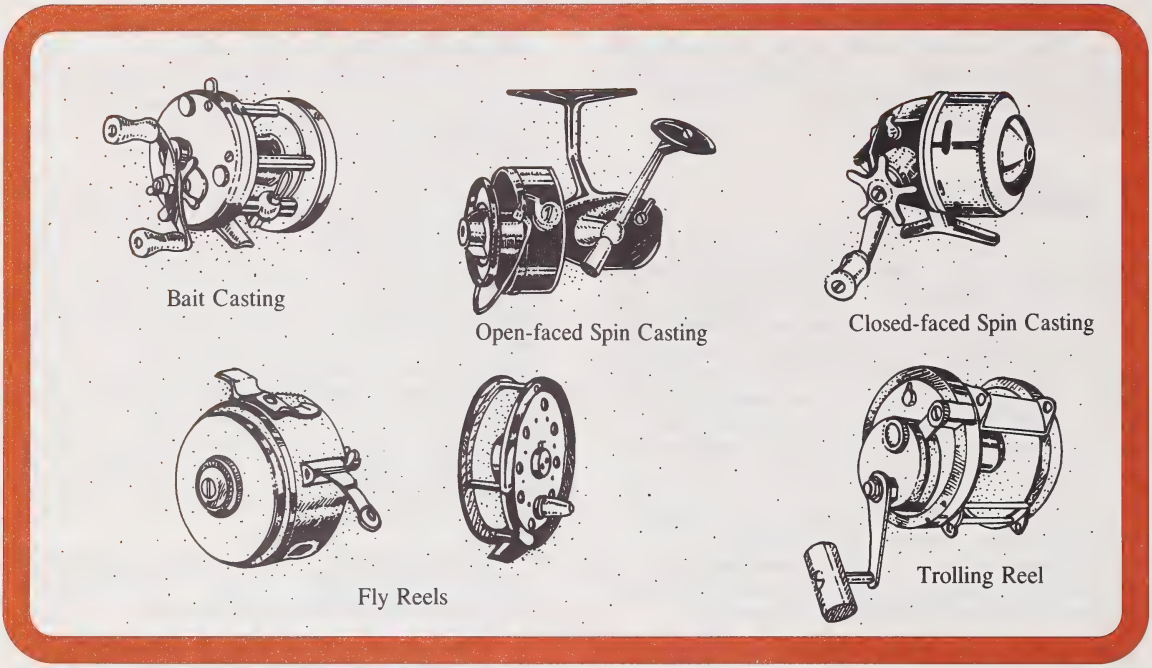
Rod guides vary in composition, eye opening size, and position on the rod shaft. Rod guides may be lightly or heavily chromed or made of carbide or aluminum oxide. Lightly chromed guides are the least expensive but wear quickly under normal fishing conditions and can fray and ruin fishing line. Heavily chromed guides are popular and not expensive. Under normal fishing conditions they will last many years. Carbide is a very hard metal, and will wear even longer than heavily chromed guides. Aluminum oxide is a new and expensive material used to make guides that are super smooth for better casting distance. Carbide and aluminum oxide guides can easily crack if not handled carefully. Sharp edge of the cracks can cut and fray your fishing line.

Guide placement on the shaft depends primarily on the amount of flex, or bend, in the rod. The more flex in the rod the closer the guides should be together.

A ferrule is the joint that holds the rod sections together. Ferrules are made of glass, graphite or metal. They must be kept tight to maintain the overall action of the rod. Ferrules can be a major problem if not kept clean and lubricated. A rod with many ferrules such as a telescopic or pack rod loses flexibility and sensitivity as compared to a rod with only one or two ferrules.



Typical Two-piece Rod



Reels

The basic function of any reel is to store line and retrieve it once it has been cast. Different reels are used for different angling techniques. However, all reels have three elements in common; drag, spool and gear ratio.

The drag of a reel is the braking system that produces a certain desired level of friction and slows down the rate that the line can be pulled out of the spool. In order to do its job properly it must produce that friction smoothly. The drag has to be adjusted according to the strength of the line being used. A common reason for the "one that got away" is the drag was not adjusted properly.

The spool is the area where the line is stored on a reel. Spools can be revolving or fixed. During a cast, the fixed spool does not move, while a revolving spool rotates or turns as the line shoots out. A problem with a revolving spool is that if the fishing tackle is not balanced, the spool may revolve faster than the line can feed out, causing the line to tangle inside the reel, generally known as a "backlash".

Gear ratio is the measurement of the differences between the rotations of the spool and the handle. For example, a ratio of 4.5/1 means that one complete turn on the handle will turn the spool around 4.5 times. The higher the gear ratio, the quicker the angler is able to reel in line.

Lines

Each of the three types of fishing line (monofilament, braided, and fly line) has its own place in the world of fishing.

Monofilament

Monofilament (mono) is either a clear or colored line that is made of one continuous fibre. It is line most often used in spinning and spincasting reels. Mono is soft and elastic enough to allow it to flow off the reel easily as it is cast.

There are many variations in mono line in use today, each designed to meet a particular need. Some of the properties to consider when choosing a particular line are diameter, stretch, breaking strength, and knot strength.

Diameter

Diameter is the thickness of the line. The thickest line is not necessarily the strongest. The best fishing line has the smallest diameter in relation to its strength. Finer line packs more evenly, casts better and offers less resistance in both wind and water. With smaller-diameter line, more can be put on the spool.

Stretch

Stretch is the elasticity or "give" in the line. A line should have enough stretch to absorb stresses such as the sudden strike of a fish or snagging into a log. If a line has too much stretch it is difficult to set the hook when a fish strikes. Before the hook can be set, the angler must pull the stretch out of the line.

Breaking Strength

Breaking strength is rated in terms of the amount of weight a line will bear without breaking (for example, ten pounds test breaks at ten pounds of pull). Breaking strength is usually underestimated, so that ten pounds test may actually break at between eleven and sixteen pounds of pressure.

Knot Strength

Knot strength is another rating of line strength when a knot is tied in the line. It is given as a percentage of breaking strength. A ten pound test line with a knot strength of 80 per cent could be expected to withstand eight pounds of pull at the knot.

There is nothing more frustrating to an angler than mono which has become twisted. Instead of flowing off the reel, the line comes shooting out in large twists that get caught in the reel or rod guides. Line becomes twisted when put on an open faced spinning reel incorrectly, if a lure is used which spins and not equipped with a swivel, or if a spinning reel is cranked without retrieving any line.

Twist caused by using a spinning lure without a swivel can be prevented by using a good swivel above the lure.

Twist caused while playing a fish, by cranking the reel without gaining line, is more difficult to prevent or correct. Every time the roller ball on the reel makes a complete revolution around the spool, and no line comes into the spool, one complete twist is added to the line. Unless the angler pulls the fish toward him and regains line on every crank of the reel handle, the line will twist. It takes experience and practice to overcome the tendency to merely crank the handle when a fish is hooked. One solution is to tighten the drag just below the breaking point of the line.

It is sometimes possible to untwist a line by removing all lures, leaders and swivels, and let the line trail behind a moving boat. If this does not work, the only alternative is to discard the line.

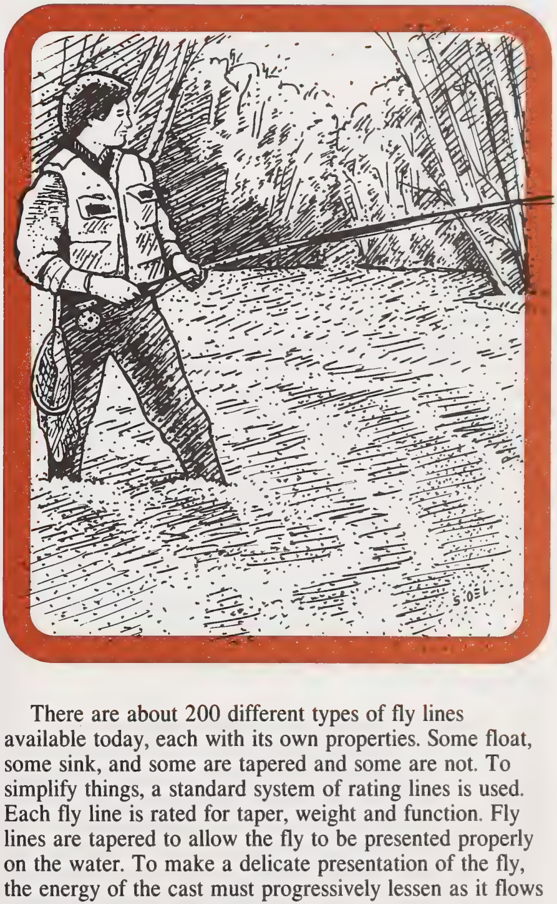
Monofilament line deteriorates with time, and should be stored in a cool, dark place. It will also lose some of its strength when it is saturated in water or left exposed to bright sunlight.

Braided Lines

Braided lines are fairly heavy limp lines made of several strands of either nylon or dacron. This type of line is usually used in bait casting reels or as backing on a fly line. Braided line is best for catching big fish. Nylon and dacron both cast well but nylon is very stretchy, making hook setting difficult. Dacron should be your first choice for strength and very low stretch.

Flylines

In fly fishing, it is the line that is cast, not the lure. Flies are very light in weight and it is the weight of the fly line that carries the lure while being cast. Fly lines are made of synthetics such as dacron, nylon and various plastics. Depending on which material, lines of equal weight have different qualities and different diameters.



There are about 200 different types of fly lines available today, each with its own properties. Some float, some sink, and some are tapered and some are not. To simplify things, a standard system of rating lines is used. Each fly line is rated for taper, weight and function. Fly lines are tapered to allow the fly to be presented properly on the water. To make a delicate presentation of the fly, the energy of the cast must progressively lessen as it flows down the line.

There are four types in use: level (L); double taper (DT); weight forward (WF) and shooting taper (ST).

Level fly line has a uniform diameter from end to end. Despite its limited performance and versatility, it is often used by beginners because it is less expensive than other types of fly line.

Double tapered line has a centre section of uniform diameter but tapers at both ends. It is usually used when long casts are not required. It is the most popular because it allows the fisherman to present the fly delicately and is easy to cast. When one end wears, it can simply be reversed on the reel.

Weight forward line has most of its weight in the forward section of the line. This allows for longer casts. Because it tapers to a fine diameter, it runs out quickly through the rod guides.

Shooting taper is a short heavy fly line that is attached to a "shooting" line. A shooting line is a level fly line or monofilament that allows the fly line to be cast long distances.

The weight on fly lines is a standard measurement numbered from one to 15. The higher the number, the heavier the line.

Function is the buoyancy of the line, and is rated as floating (F), sinking (S), intermediate (I), or floating/sinking (FS).

Floating fly line is made to ride on top of the water permanently. This allows anglers to use dry flies to catch fish near the surface. Sinking line sinks to a specific depth, to carry a fly to fish feeding below the surface or near the bottom. Intermediate fly line stays at the surface or sinks very slowly, and is used in choppy water, where floating lines would make it hard to detect a strike or set a hook. The floating/sinking line combines properties of both the floating and sinking lines. The forward section of the line sinks, while the balance of the line floats.

Matching the line to the rod and leader is critical for successful fly casting and fishing. Each component must match the other two. Modern fly rods have the number (weight) of line required printed on the rod. For example, a double-tapered, medium weight sinking line would be labelled DT-8-S.

Another thing to consider in choosing line for fly fishing is color. Although the color of the line seems to make no difference to the fish, it is very important to the angler. It is very difficult to control a fly line that you can not see, so most anglers choose highly visible lines of bright or fluorescent colors. Being able to see the line in the air helps you to see and correct any casting problems, and when you can see the line on the water you can pick up the slightest strike on the fly. The leader is lighter nylon line attached to the end of the fly line that carries the lure or fly. It provides an almost invisible connection to the fly, allows the fly to be presented very delicately and allows the fly to drift or float as though it were free. These functions are best performed by leaders that are tapered.

The most common and generally accepted taper for a leader is 60-20-20. The back 60 per cent of the total leader length is made up of heavy nylon. The middle 20 per cent is composed of a series of short sections of soft nylon that get progressively smaller in diameter. The final 20 per cent makes up the fine "tippet", the extremely small diameter line at the end of the leader.

The only method of understanding the X rating of tippet diameters is to remember the rule of 11. A tippet that is .011″ in diameter is 0X. For each decrease in .001" in diameter the X number increases by 1 (ie. 1X is .011″ - .001″ = .010″).

It is also important to match the tippet diameter to the size of the fly. If the tippet is too fine the fly will not present itself properly on the water.

MATCHING TIPPET AND FLY

Tippet Size	Fly Size
0X	1 and 2
1X	4 - 8
2X	6 - 10
3X	10 - 14
4X	12 - 16
5X	14 - 18
6X	16 - 22
7X	18 - 28

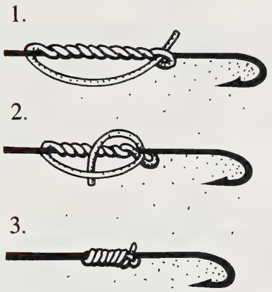
Knots

Fishermen must have a basic knowledge of knots, both how to tie them, and when to use each type. Knots are used to attach lures to line, splicing leaders to line, line to line or attaching line to reels.

All knots reduce the breaking strength of the line. A loose or poorly tied knot reduces the breaking strength even more.

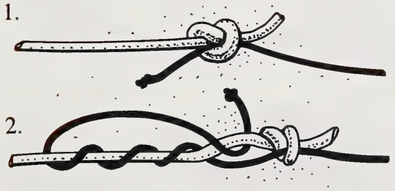
They should be tightened slowly and smoothly for best results. With knots that require turns to be made around the line, at least five full turns should be made.

Improved Clinch Knot
(Fishermans Knot)



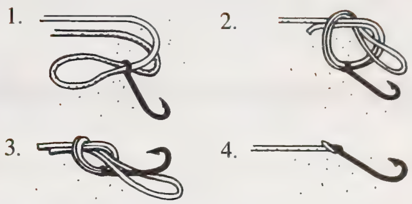
(1) Run line through the eye and wrap it back around itself five or six times. Then bring the end back through the opening between the eye and the beginning of the twists. (2) Then run it through the large loop formed by the previous step. (3) Pull slowly on the standing part of the line, being careful that the end doesn't slip back through the large loop and that the knot snugs right up against the eye.

Shocker Knot



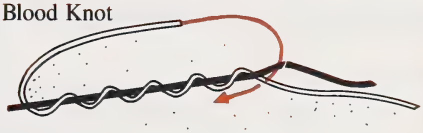
(1) Tie a loose overhand knot in the heavyline. Tie a tight overhead knot in the thin line. Now put the thin line through the loose overhand knot then tighten it. (2) Now wrap the thin line around the heavy line 4 or 5 times and bring the end back through the opening created near the heavy lined overhead knot.

Baitfishing Knot

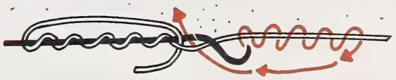


(1) Pass line or leader through the eye of the hook and back again to form 3- or 5-inch loop. (2) Hold the line and hook at the eye. With the other hand, bring the loop up and under the double line and tie an overhand knot but do not tighten it yet. (3) Hold the overhand knot. With the other hand, bring the loop over the hook. (4) Pull the line to draw the knot to the top of the eye. Pull both tag end and running line to tighten. Clip tag end off about ⅛ inch from knot.

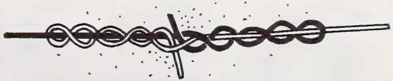
Blood Knot



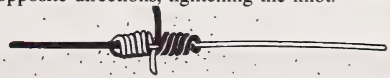
1. Wrap one stand around the other at least four times, and run the end into the fork thus formed.



2. Make the same number of turns. In the opposite direction, with the second strand, and run its end through the opening in the middle of the knot, in the direction opposite that of the first strand.



3. Hold the two ends so they do not slip (some fishermen use their teeth). Pull the standing part of both strands in opposite directions, tightening the knot.

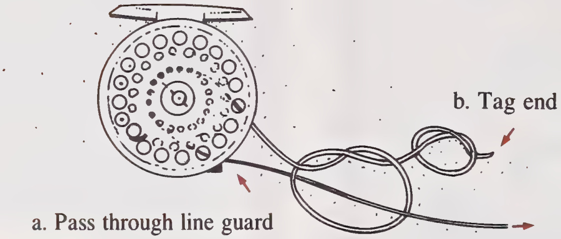


4. Tighten securely, clip off the ends, and the knot is complete.

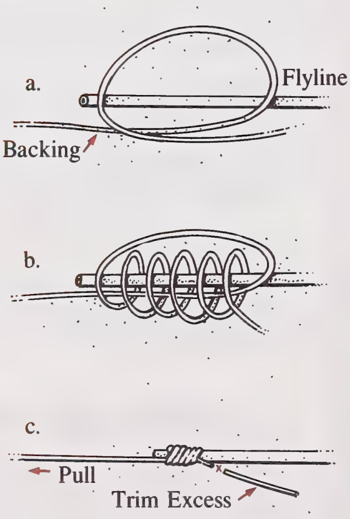
Fly Line Knots

There are five basic knots to know when using fly lines. The first attaches the backing line to the reel; the second ties the backing line to the fly line; the third ties the fly line to the leader; the fourth ties the leader to the tippet and the fifth ties the tippet to the fly.

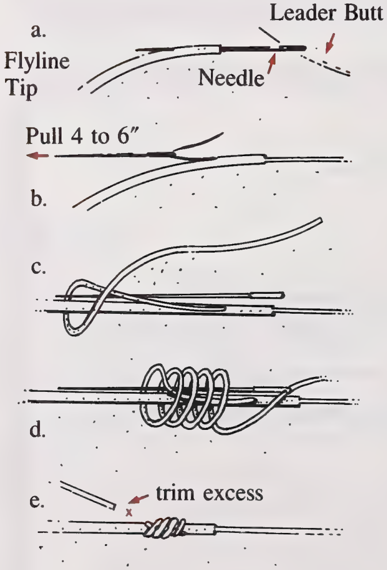
1. Backing Line To Reel



2. Backing Line To Flyline



3. Flyline To Leader



Loading Line on Reels

A person can eliminate many problems with their equipment by following a few basic rules when loading line onto a reel. When putting any kind of line onto a closed-faced spinning reel, bait casting reel or a fly reel, a person should follow this procedure;

1) put line through eyes of fishing rod
2) tie line onto reel spool
3) put a pencil through the centre of line spool
4) pull line so it is tight and maintain constant tension
5) reel line from line spool to reel spool

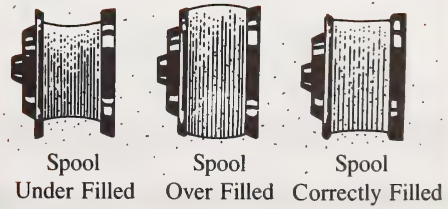
The line should go onto the reel spool so that it packs solidly and evenly. The reel spool should be very near completely full. This allows for better casting and play of the fish.

This method is not recommended for loading monofilament onto open-faced spinning reels. On open-faced reels, it is nearly impossible to eliminate line twist completely no matter what is done. The best solution is to have a dealer or fishing shop spool your reel with a line winding machine. If you are putting the line on yourself, you may be able to reduce the amount of line twist by following this procedure;

1) put line through eyes of fishing rod
2) tie line onto reel spool
3) lay the spool of line flat on the floor
4) keep line fairly loose so the coils can be seen in the line.

The trick is to get the line coming off the spool in the same direction that it goes on the reel.

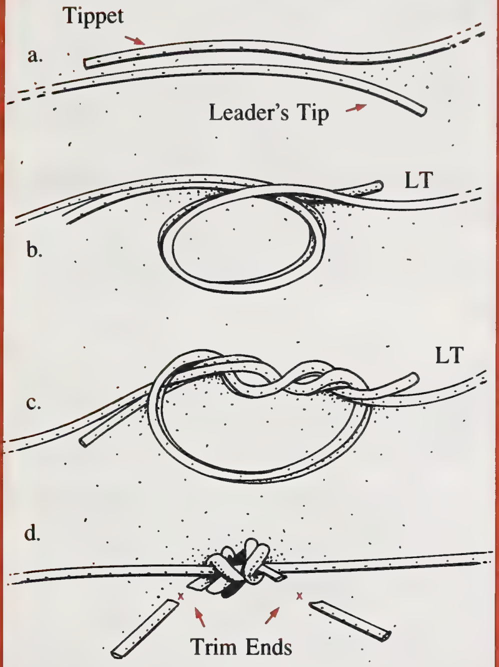
The reel spool should be filled to within half a centimeter (1/8 inch) of the lip. If it isn't filled to this level the friction that is created as the line tries to climb over the lip of the spool severely limits the distance and accuracy of the cast.


Spool Under Filled

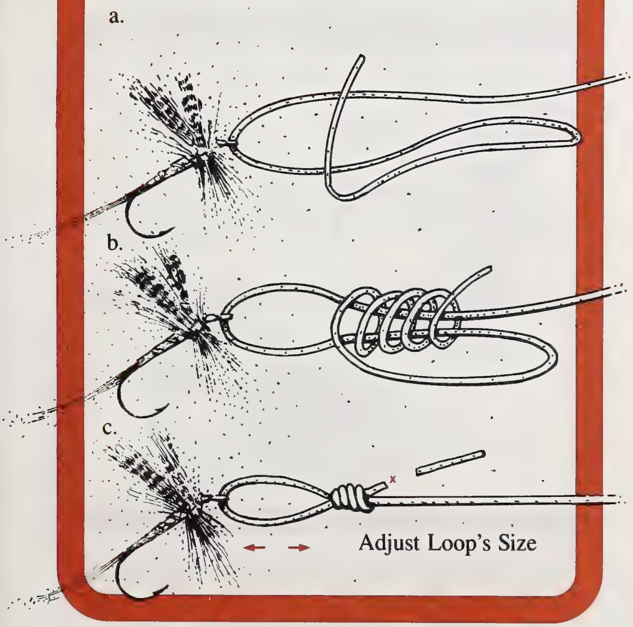
Spool Over Filled

Spool Correctly Filled

4. Leader To Tippet

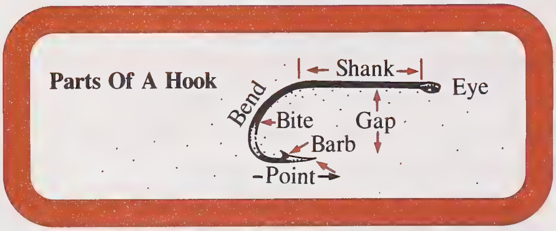


5. Leader To Fly



Hooks

Fish hooks come in hundreds of sizes, shapes and designs and are made from carbon steel, stainless steel or a rustless alloy. Some are hardened, tempered, plated or bronzed.

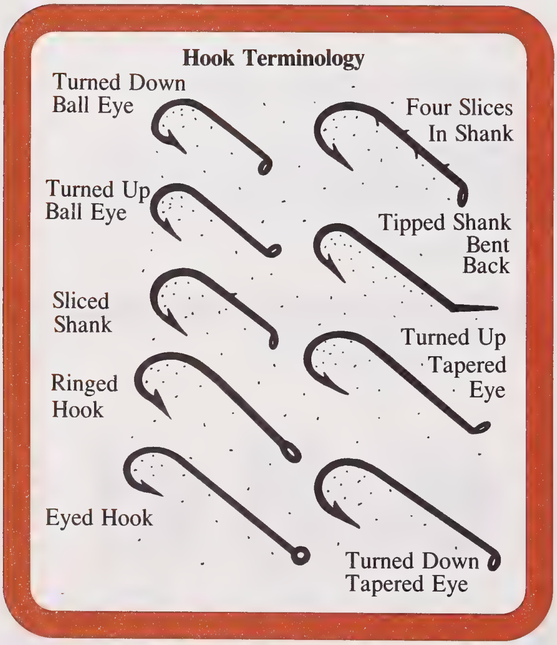


Parts Of A Hook

There is no one hook that is perfect for all kinds of fish or lures, so an angler should have a variety of hooks to choose from.

Curved shanks, either curved left or right, have been designed for bait-fishing. The offset point is more easily set. Shanks can also have small points or "slices" on them. These are turned upward and are used to hold bait along the shank.

A barb on a hook is designed so that the hook does not easily pull out. If an angler wishes to "catch and release" the fish, the use of a barbless hook will make releasing the fish easier and will reduce the chance of harming the fish.



Hook Terminology

Eye size depends on the size of the lines or leaders to be connected to the hook. Straight eyes are used on all lures, spinners, etc. The turned-up eye is used with short shanked flies, while the turned-down eye is used with all other flies and for bait fishing.

Artificial Lures

Artificial lures are available in various sizes, weights, shapes and colours. Lures also differ in function, being designed to sit on the surface of the water or to sink to a specific depth.

Fishing lures are designed to look like and move like something the fish would eat. They are shaped to resemble small flies or insects, insect larvae, bugs, minnows, other fish, invertebrates and small crustaceans, or they are made to move like prey by wiggling, spinning, vibrating or making sounds.

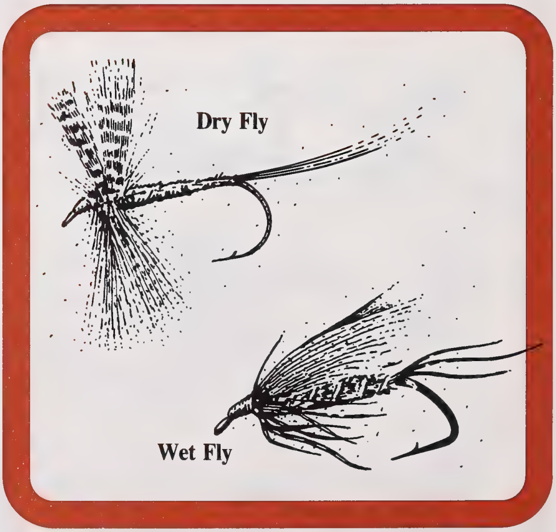
Fishing lures fall into the following classes: flies, spoons, spinners, plugs and jigs. There are also many combinations of each of these types.

Flies

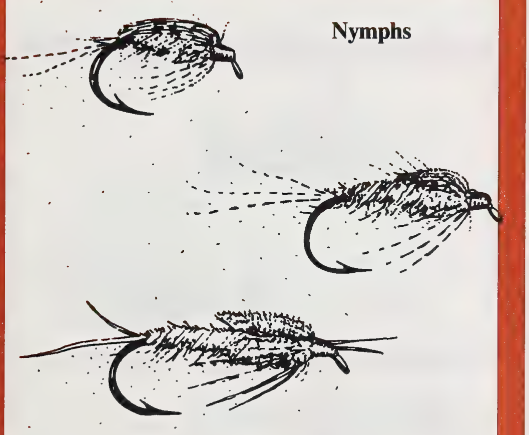
Artificial flies are made from fur, hair, feathers, wool, or tinsel and other synthetics. These materials are tied around a hook to resemble insects and their larvae that are found on, above or in the water or small minnows. Flies are classified as dry, wet, nymphs and streamers.

Dry flies are designed to float on or in the surface of the water, so they should be made of water repellant materials, and have a fine high quality wire hook. A waterproof liquid or spray may be applied to the fly to allow it to float longer.

Wet flies are designed to sink just below the surface. They are fished in a manner that suggest a swimming or drowned insect, small fish or crustacean. Although wet flies are tied for fishing beneath the surface, they do not have weighted bodies. Heavier wire hooks and water absorbent materials provide the extra weight needed to carry them below the surface.



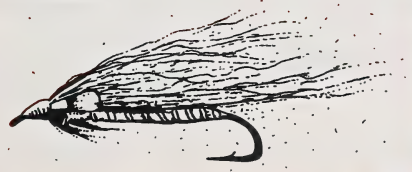
Nymphs are also fished below the surface, but because they are designed to resemble the larvae of insects and crustaceans they are fished at many depths. The shank is usually weighted with lead or copper wire to allow them to reach the desired depth. Nymphs work best when made with soft natural or synthetic materials that look and act alive in the water. The best colors are natural shades of brown, olive, grey, cream or black.


Nymphs

Basic lengths and shapes that resemble most aquatic larvae.

Streamers are flies that resemble small fish or minnows. They can also be fished at all depths of water. The top portion of the streamer is usually darker colored, in black brown or grey, while the bottom is usually lighter colored, in blue, green, yellow or white. Bright and metallic colors add to the streamers' attractiveness.

A streamer can be weighted or not. The wings of a streamer are usually made of feathers or hair. Hair wings are longer, but soft feathered wings absorb water, giving them better action.

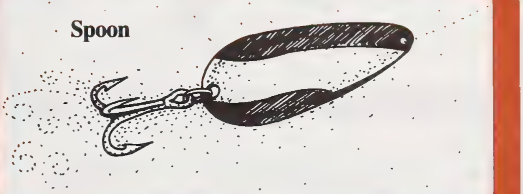

Streamer

Spoons

Spoons are lures that are shaped like a spoon to resemble small fish. They are shaped so that they wobble or flutter back and forth in the water, and are made with single, double or treble hooks attached to the tail end.

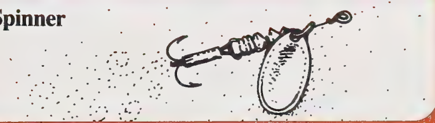
They are made of metal and are painted in a wide range of colors from dull blacks and whites to fluorescent reds and oranges, with three or four colours sometimes combined on a single spoon. A variety of weights and sizes allow you to match the spoon to the depth and size of the fish you are after.

By adjusting the speed that you retrieve your spoon or the speed of your motor while trolling, you can alter the action of the spoon. A spoon that is retrieved or trolled too fast will spin over and over causing a twisted line. The use of a swivel will help prevent twisting.


Spoon

Spinners

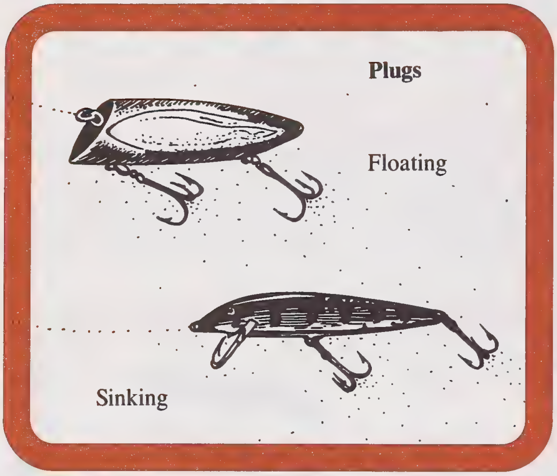
Spinners have a thin blade that revolves or spins around a wire shaft. The spinner acts as an attractor by both flash and vibration. Most have one or two blades, but some have more. The blades come in a wide variety of shapes and sizes, to suit a particular fishing situation. Oval, egg, kidney and willow leaf shapes are among the most common. They may have a single or treble hook attached to the ends of the shaft. If bait is used, it is usually attached to the spinner with a single hook.


Spinner

The retrieval of a spinner is the same as that of a spoon. Using a small swivel or swivelled leader will prevent the spinner from twisting the line. A specialized form of a spinner is known as a gang troll. It is a series of spinning blades, with a small lure, or bait hook, attached behind it. They are designed to represent a school of small fish.

Plugs

Plugs are lures that are made out of wood, plastic or rubber and are designed to imitate small minnows, fish, frogs, bugs, small crustaceans or small animals. They are designed to either float or sink.



Floating plugs are designed to float on the surface, going just below the surface when retrieved, in order to create an action that imitates a crippled or injured fish. They have cupped or flat shaped heads, metal lips, propellers or other devices to create this action. Floating plugs come in many shapes, sizes and color combinations. They are designed for use in shallow water or for surface feeding fish.

Fish may strike while a plug is motionless on the water. After casting, allow the plug to remain still for 10 - 30 seconds, then jerk or retrieve it a meter or two. Repeat this process, with some variation, until the right combination is found.

Diving plugs are of two types: those that float along the surface, diving only when retrieved and trolled; and those that sink slowly in the water. They have a head or metal lip angled so that when retrieved, the plug dives down beneath the surface of the water. Usually, the angle of the head or lip determines the depth the lure will reach. Most diving plugs only go down to about three metres, but a weight added to the line above the lure will allow it to reach greater depths.

Sinking plugs come in a variety of shapes, sizes and colors, with the most popular colors being the ones which resemble a real fish. A few underwater plugs contain ball bearings or pellets to create a sound as they move through the water and may be more attractive to fish.

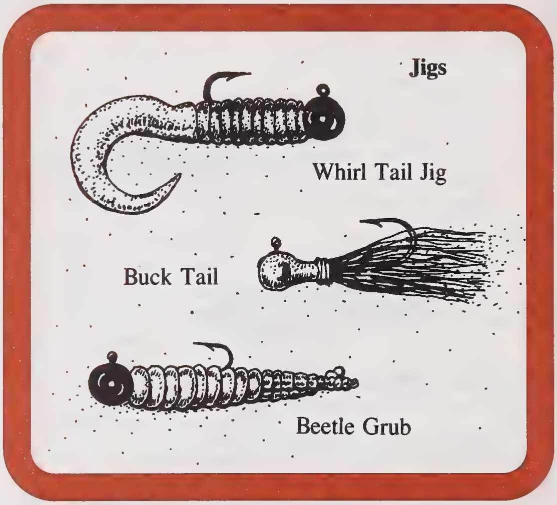
Any plug, whether surface or diving, must be trolled or retrieved fairly slowly so it doesn't roll wildly and cause severe twisting or tangling of lines.

Jigs

Jigs are lures that have a weighted head (usually lead), a solid fixed hook and a body/tail of feathers, hair bucktail, plastic or other materials. Jigs vary in size from 1/16 oz. to more than 6 ozs. A jig is designed to imitate baitfish, crustaceans and other swimming forage.

A jig will take any type of gamefish in Alberta.

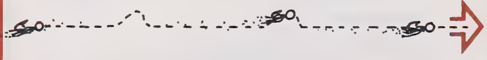
Jigs are designed so the hook bounces off the bottom with the point upwards. This minimizes the chance of a snag.



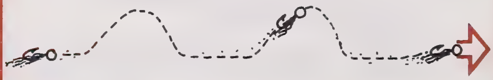
Jig heads come in many different shapes. Some of them are: round, long banana shaped, flat headed, etc. Each shape is designed for special water conditions such as rocks along bottom, moving water, still water, and weeds.

Jigs are usually bounced or drug along the bottom. A basic rule of thumb is to use small jigs and speed in the spring and large jigs fished slowly in the summer, fall and winter. Some standard methods of retrieving a jig are:

(1) slow long drags with short hops.



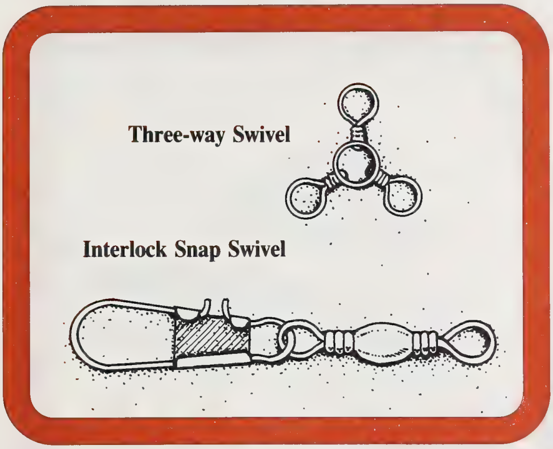
(2) standard drag with high hop.



Other Equipment

Swivels and Wire Leaders

The main function of the swivel is to prevent the line from twisting. Some also allow the angler to attach more than one component (sinker and lure), while others allow lures to be changed quickly. Swivels have two or three components that are made so that each rotates separately from the other.



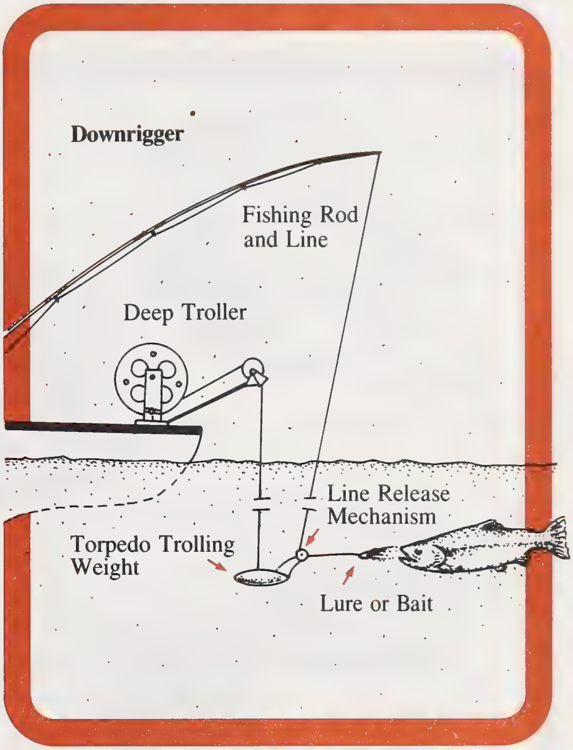
Wire leaders have a strong wire to join the swivel to the snap, which prevent the fishing line from being bitten off, by some species of fish that have sharp teeth. Most leaders are less than 30 centimetres (12 inches) long.

Sinkers

Sinkers are used to carry the bait or lure down to a desired depth. Most sinkers are made of lead and vary in weight and size. Sinkers come in a variety of designs depending on where they are located in relation to the lure. Some sinkers are attached to the line ahead of the lure and some are attached to the end of the line below or behind the lure.

Down Riggers

This rig is used to get a lure down to a specific depth. When a fish grabs the lure, the line automatically slips away from the heavy weight of the rig, allowing the angler to play and reel in the fish without a lot of extra weight. The down rigger is then reeled in separately.



Floats

Floats and bobbers are usually made from plastic or cork and are used primarily for baitfishing. There are many types and shapes of bobbers. They are attached directly to the line and float on the surface, allowing the bait to be held at a constant distance below the surface.

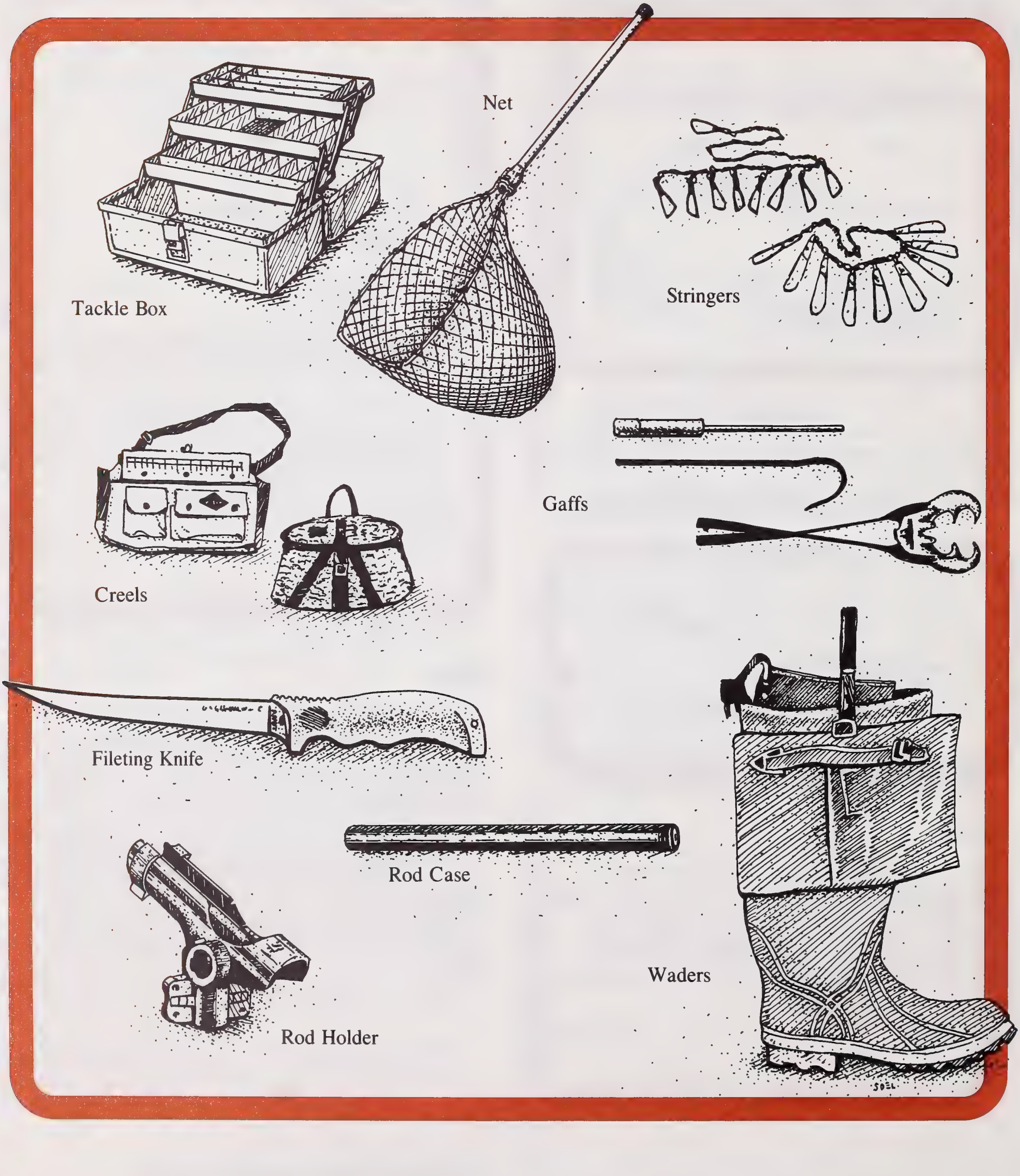
It is very important to balance the size of the float used with the weight of the bait or lure. The float should not be any larger than what is required to keep the bait at the predetermined depth. Too small a float will be pulled down by the weight of the bait or lure; too large a float will not show much movement when the fish grabs the bait.

Tackle Boxes

Almost all tackle boxes are made of plastic or metal and should last indefinitely. You can choose from a great range of sizes and shapes, including boxes with special features like spinner bait racks, bait compartments and over-sized lure compartments.

Nets

The size and shape of a landing net that you will need depends on the type of fishing you are doing. Larger fish need a larger net. The length of the handle depends on how much reach is required to get the fish out of the water. If your boat is very large and has high sides you will need a long handle. Some nets have adjustable handles.



Stringers and Baskets

Stringers and baskets are used to keep fish alive for a time by suspending them in the water beside or behind the boat. This allows fish caught early in the day to be brought ashore in the evening in better condition than if they had been killed immediately and stored on board the boat all day.

Stringers may be made of nylon or plastic string or a chain with snaps. The string type have a large sharp metal needle at the front end and a heavy wire ring at the other. The chain stringers have a metal snap at one end (attached to the boat) then 6-12 snaps spread out along the other end that are used on the fish.

Baskets are made of wire mesh, with spring-operated lids.

Creels

Creels are used to keep fish cool until proper refrigeration is available. They are usually made of wicker, rattan or canvas. They are kept wet, so that the water evaporating from the creel cools the fish.

Gaffs

Gaffs are large hooks mounted on a solid handle that are used to hook onto large fish, to help the angler lift it into the boat. Gaffs are sometimes used when ice fishing, to help pull large fish onto the ice.

Knives

Good knives kept sharp are of great value to the angler.

Rod Holders and Cases

Rod holders are used for still fishing with bobbers or when trolling. They are designed to be mounted on the hull of a boat.

Cases made of plastic, heavy cardboard or aluminum are used to protect rods while they are being transported.

Waders

Waders are really just extra tall rubber boots that allow you to keep dry while wading into deeper water. Chest waders resemble overalls. Hip waders cover the upper thigh and are suspended from the belt on your pants.

For added safety, chest waders should have a belt which holds them closely around the body. This keeps them from filling quickly with water if you slip and fall. Any type of rubber boot can be slippery on wet or algae-coated rocks. Some anglers add some kind of non-slip material such as indoor-outdoor carpeting to the sole to give them a better grip.

Survival Kit

Everyone who ventures into the woods to hunt or fish, to hike or even for a short walk should carry a personal survival kit. The kit should be small and light and should be carried with you at all times. If the kit is heavy, you are much less likely to take it along. The best survival kit is one that is compact enough to be carried in a jacket pocket.

The following list contains suggestions for a small kit which could save your life:

CONTAINER - an empty pipe tobacco can, approximately 8 by 11 centimeters (3 1/4 × 4 1/2 inches) is a convenient size, which may also be used for cooking.

CONTAINER LID - painted a bright color so it can be found if lost.

HANDLES - holes should be drilled in the container and handles attached for cooking.

MATCHES - long stemmed, wooden, strike anywhere matches or windproof matches with a striker.

FLINT AND STEEL

FIRE STARTER TABLET - burns approximately 6 minutes.

ABSORBENT COTTON - excellent tinder, easily ignited with matches or flint and steel.

KNIFE - small pocket knife with 2 blades.

FISHING EQUIPMENT - 2 spoons (red and white Len Thompson #6), 2 dry flies (Royal Coachman), 2 wet flies (Black Gnat), 2 snelled hooks (size 8), 4 lead split shot, 15 yards (4 meters) monofilament line (10 lb/4 kg.) test.

SAFETY PINS - 4 assorted sizes

NEEDLE AND THREAD

NAILS - 4 assorted sizes

PENCIL AND PAPER

SNARE WIRE - 3 yards (2.7 meters) of copper or brass wire.

OXO CUBES - 2

SALT - 1 or 2

TEA BAGS - 1 or 2

SIGNAL MIRROR - with signalling instructions.

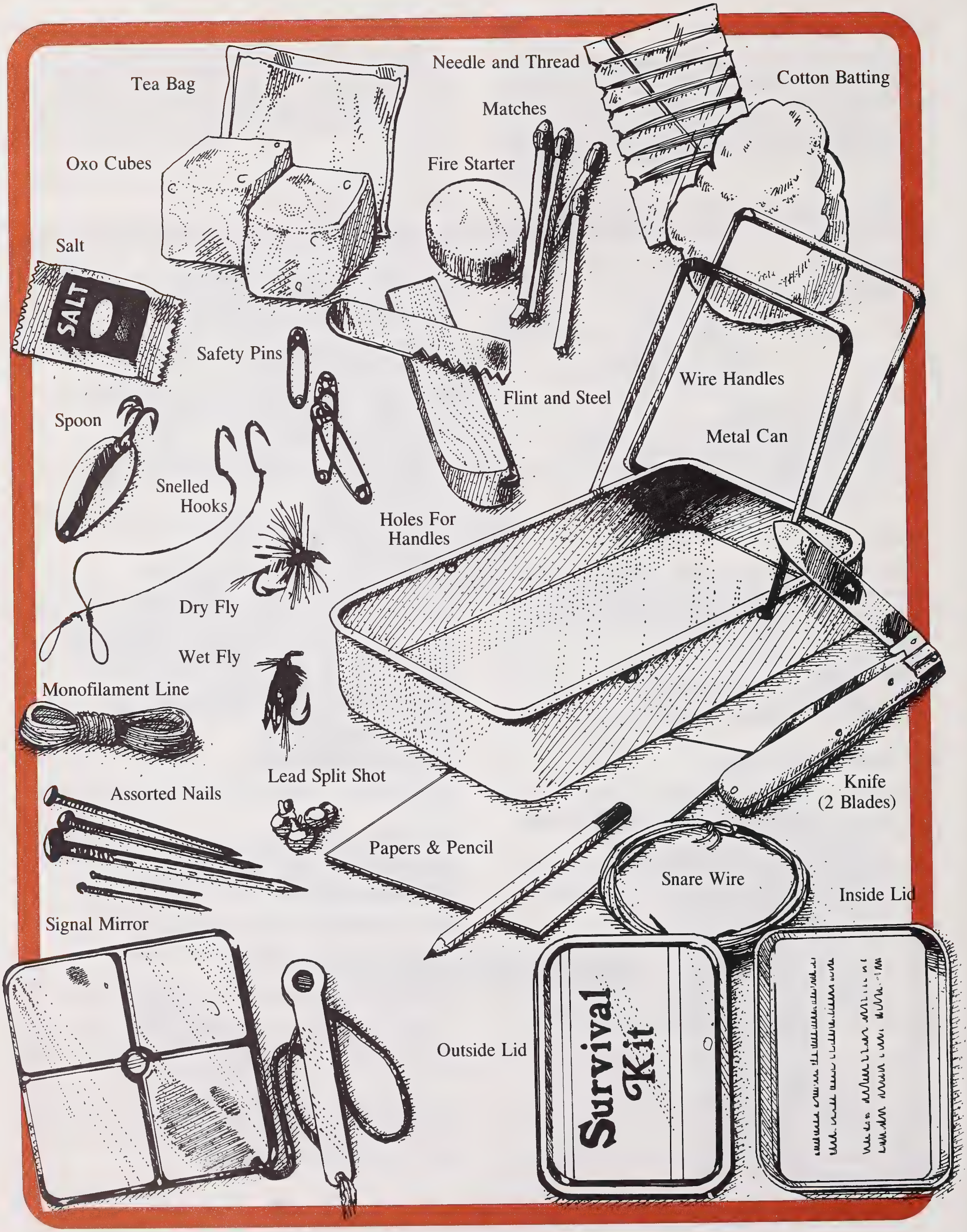
TAPE - tape lid to container with 18 inches (46 centimeters) of waterproof tape.

FLARE GUN AND FLARES - pencil type and 2 flares.

Items may be added to this list, but do not include large amounts of food, cooking pots and other gear you would normally take camping.

Each time you go fishing, practice using one or two items in your survival kit. This will give you confidence in your kit if you should ever need to use it. Replace any item that has been used.

Survival Kit



First Aid Kit

As well as carrying a well-equipped first aid kit, you should have some knowledge of basic first aid techniques. If you or someone else is injured, you can provide aid until a doctor arrives, prevent injuries from becoming more serious, or save a life. You can buy first aid kits in a variety of sizes, but you can easily put one together yourself. Be sure you know what is in your first aid kit and how to use it. A basic kit should include the following:

First aid handbook

Bandaids - approximately 6-12

10 × 10 centimeters (4 × 4 inch) sterile bandage

Roll of gauze bandages - 2.5 centimeters (1 inch)

Adhesive tape - 1 centimeter × 1.5 meter (1/2 inch × 5 yards)

Petroleum Gel

Antiseptic

Razor blade

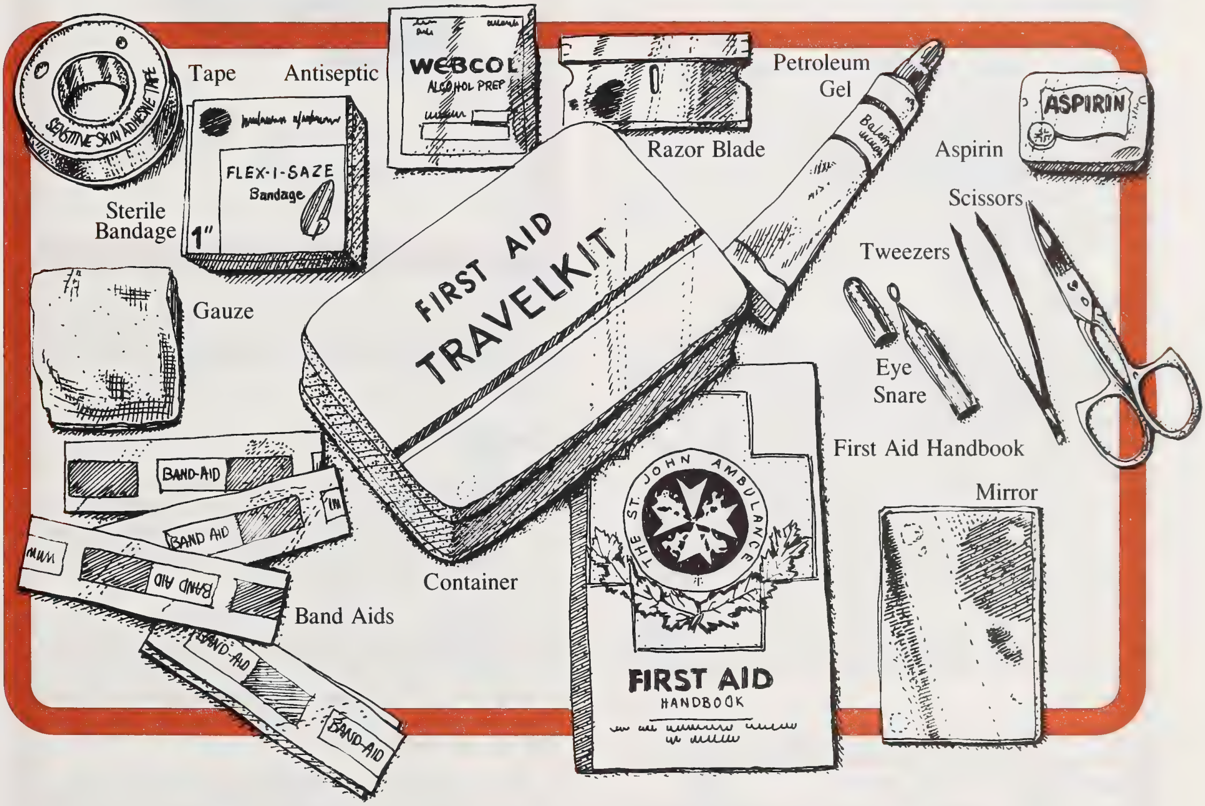
Small scissors

Tweezers

Eye snare

Small mirror

Aspirin



Angling Techniques

There are many different ways to angle for fish, each having its own specific types of equipment. The particular angling method depends on the species of fish sought and the personal preference of the angler.

Spinning

Spinning is a form of angling where the angler casts a lure using a fixed reel known as a spinning reel. This method of fishing allows the angler to cast and retrieve his lure on a continuing basis.

The Rod

There are spinning rods designed for every kind of sportfishing, ranging from 1.2 to four metres (four to 13 feet) in length and from 50 grams to one and a half kilograms (two to 30 ounces) in five weight categories: ultralight, light, medium, heavy and extra-heavy. They can be made of any of the fibres commonly used for rod construction. Most come in one or two sections, although a few rods break down into as many as six sections. There are two basic types of reel seats, sliding and fixed.

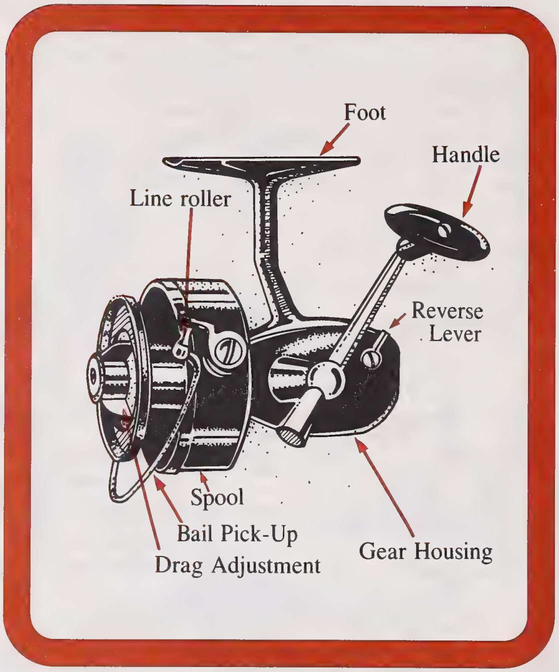
The Reel

Spinning reels use a fixed spool for easier casting. A right-handed spinning reel has the handle on the left side, so a right-handed person can hold the rod with his or her stronger arm and operate the reel with the other. The open-faced type has the line and spool exposed, while the closed face has a cover. Most spinning reels are open-faced. They have a line pick-up mechanism called a bail. This is a metal arm that extends across the front of the reel which swings up and locks during a cast, then when the angler gives a slight turn of the handle, it snaps down, engaging the line for the retrieval. As the line is being rewound into the reel, a line guide directs it evenly onto the spool. A roller guide is better than stationary guides because it will not wear and cause fraying, as stationary guides do.

The drag on open-faced reels is usually a lever drag, and is usually located on the front of the spool. Some are located at the back of the reel.

Gear ratio is a matter of personal preference, but many anglers prefer a high gear ratio, which makes reeling easier.

The spools on most reels are now made to snap off easily, so it is easy for you to change spools rather than reloading a different line when you want to change from light to heavy tackle. Deep spools are made for heavy line; shallow spools are made for light line.



These reels have an anti-reverse lock that prevents the reel handle from turning backward when trolling or when a fish is hooked.

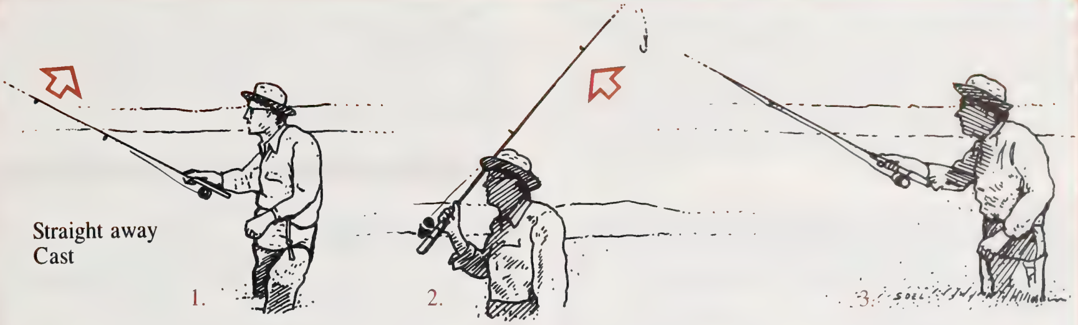
The Cast

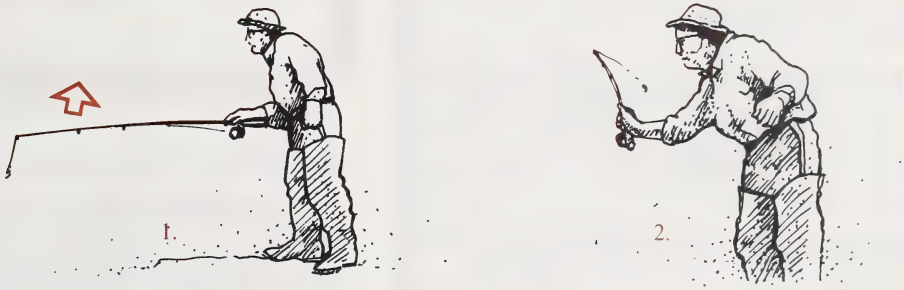
In casting spinning gear, it is the weight and momentum of the lure that uncoils and casts the line. Grip the rod firmly but comfortably, with two fingers on either side of the reel's stem. The thumb can be laid on top or along the left side of the rod's grip.

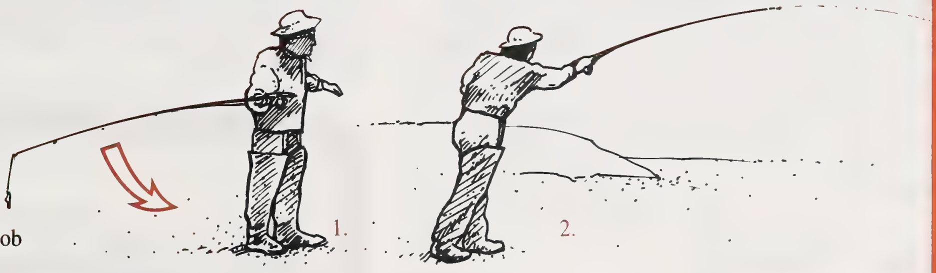
The first step is to get the line guide on the bail as close to the right index finger as possible. Now hook the line into the first knuckle of your index finger or onto the outside pad of that finger, whichever is more comfortable. With the left hand flip the bail open into the lock position, and you are ready to cast.

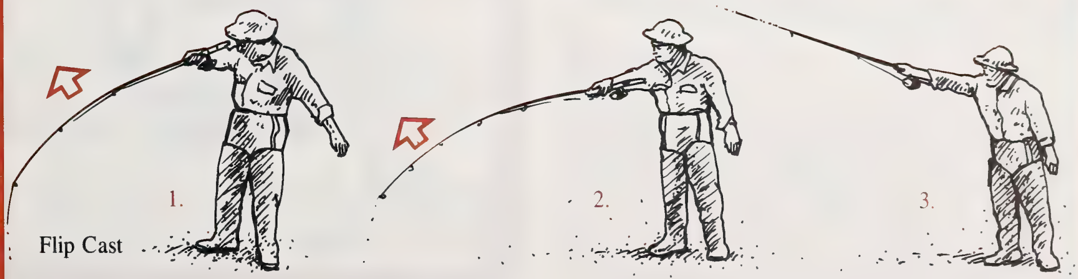
The straightaway or overhead cast is the basic cast. All other casts follow the same basic principles, and will be easily mastered once you have learned the overhead cast.

The three stages of this cast are start, power stroke and the release. To start point the rod away from you at about 50° (10 o'clock). The rod is then swung back smoothly to the cocking position. The cocking position is important because the further back you cock the rod, the more power you can get into the power stroke.


Straight away Cast


Sidearm Cast


Underhand Lob


Flip Cast

The power stroke is simply powering the rod forward and pointing in the direction you want the lure to sail. The power stroke is the key factor in the distance the lure can be cast. The faster and harder the stroke, the further the lure can be cast. Your objective at the end of the power stroke is to have the rod back in the start position of 45° or 10 o'clock. A release at 11 o'clock will cause the lure to go too high, while a cast at the 9 o'clock position will cause the lure to go too low.

The release is simply letting the line go from your index finger as you stop the rod in the correct position. As the lure hits the water, one turn of the reel handle will now engage the bail, and the lure can be retrieved.

Side arm casting is used when you are fishing narrow streams with many overhanging branches or when there are a number of people in a boat. This cast is easily made forward or back-handed. It is a good cast to use when casting into a wind.

Underhand casting is like sidearm casting, except that the cast arcs under the angler and the release gives the lure a high soft arc, allowing it to hit the water gently. It is generally used when you want to present the lure very delicately, or when an overhead cast is impossible because of overhead obstacles.

Flip casting is usually a short-range cast. It is also used to give the lure a high arc, allowing for a delicate presentation. To start the flip cast, dip the rod down quickly to about the 7 or 8 o'clock position. This will cause the rod tip to bend slightly. Then flip the rod outward in the direction you want to cast. The higher the position at which you stop your rod, the higher the arc of the lure. This cast is also good in areas where overhanging branches are in the way.

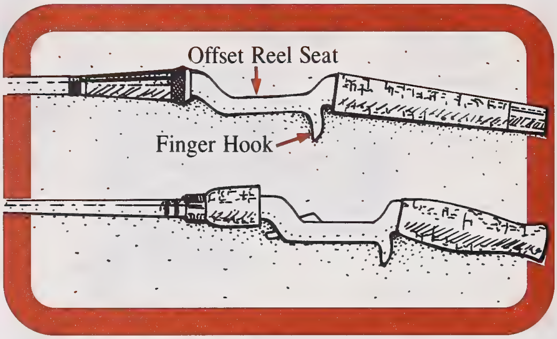
Casting in other types of fishing (spin casting, bait casting and heavy-duty bait casting) follow basically the same techniques. The only difference is with the grip of the rod and line.

Spin Casting

Spin casting is one of the most popular types of angling in Alberta. It is a very easy system to master and is recommended for beginners.

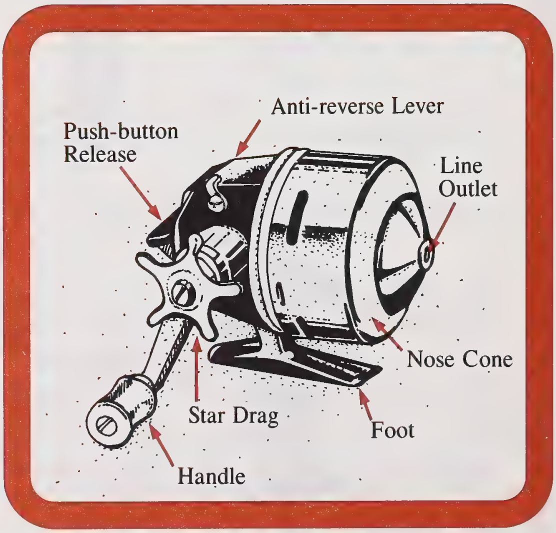
The Rod

Spin casting rods can be a little over two metres long (up to seven feet) and are usually made of graphite or boron. A one-piece rod has more sensitivity than a two-piece. Choose a rod with an offset reel seat and a finger hook for easier casting.



The Reel

Spin casting reels are the easiest reels to use and to learn good casting techniques. The reel is mounted in an offset seat on the rod so the line coming out of the reel is aligned with the eyes of the rod. It is usually mounted on the top of the rod with the handle on the right side (although there are some spin casting rods with the reel mounted underneath which work just like a spinning reel). The rod is cast with the angler's stronger arm, then transferred to the weaker arm, so the reel can be handled by the stronger arm.



Spin cast reels have a fixed spool that does not move. A release button, usually located at the back or top of the reel, is pressed by the thumb to free the spool, allowing the line to flow freely when cast. The line is directed out of the reel through the nose cone.

The greatest drawback to spin casting reels is that they are limited to small fish because of their small line capacity and limited power and strength when reeling in a heavy fish.

The Cast

Spin casting reels have a push button release located on the upper back section of the reel. The idea is to push the button in before casting and release it just as the rod points to the area where you want the lure to land. The rod also has a finger hook.

Bait Casting

Bait casting was first developed from casting live bait, but today the method is used to cast all kinds of lures. This method is also sometimes called plug casting.

Bait casting reels differ from other reels because the spool revolves during casting or reeling in. They are also commonly known as level-wind reels. This system is a little harder to master than spinning or spin casting, and is not usually attempted by beginners. It does, however, have several advantages: it is quite sensitive to a fish strike, has strength for large fish and is excellent for trolling.

The Rod

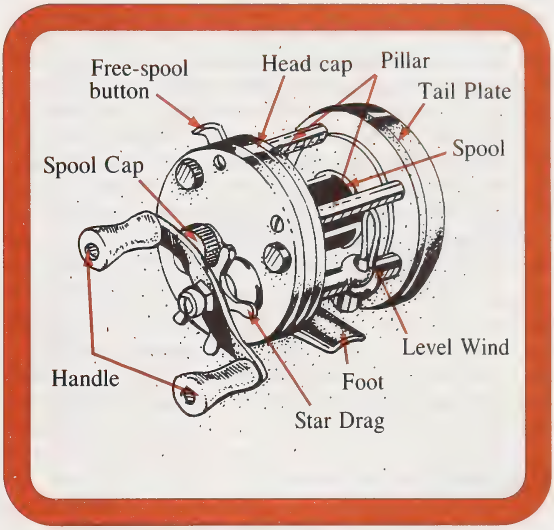
Bait casting rods are similar to spin casting rods, although a few specialty bait casting rods, have a straight handle and level seat.

The Reel

Bait casting reels combine the features of accurate casting and brute strength. They are mounted on an offset seat on the top part of the rod, which enables better casting. It is very important that the reel, rod and line be balanced for each other.

A right-handed bait casting reel has the handle on the right side of the reel. Casting is usually done with the strong hand, and then the rod is quickly transferred to the weaker arm so the retrieval can be done with the strong hand.

These reels have a revolving spool that turns as the lure is cast. With the spool revolving and the line being fed out backlash can occur. Backlash is when the line is no longer being pulled out by the lure but the spool continues to spin. This feeds out line which in turn is caught on the spinning spool and becomes tangled with the outgoing line. An anti-backlash device in the reel applies pressure to the spool axle to slow it down during a cast. Additional backlash protection comes from pressing your thumb on the spool during a cast. Only experience can teach you how much thumb pressure to apply in any particular circumstance.



Bait casting reels have a free spool release that is used when casting. Engaging the release before a cast disconnects the internal gears from the spool and handle, making casting possible.

Almost all bait casting reels now have a device called a level-wind. It is located on the front of the reel and moved from side to side guiding the line back onto the reel so it goes on evenly. This device also helps prevent backlash.

The Cast

Bait casting uses the same basic techniques as spinning.

Trolling

Trolling rods have only two sections: a butt section from about 35 to 70 centimetres (14 to 27 inches) and a tip section of about one and half metres (five feet). These tip sections are rated by weight, usually from 65 grams to just over a kilogram (three to 40 ounces). Most trolling rods are made of fibreglass or graphite, and are fitted with extra-strong guides. The stripping (first from butt) and tip guides are usually roller guides. The middle guides can be either eye guides or roller guides.

Fly Fishing

The art of fly fishing dates back about 300 years. Many people believe it is the most artistic method of fishing. It is certainly the most demanding and requires considerable practice to become skillful. The one thing that makes fly fishing different from other methods is that it is the weight of the line that is cast. This allows the angler to use a nearly weightless lure made from feathers or hair, that imitates an insect or bait fish that the fish are feeding on.

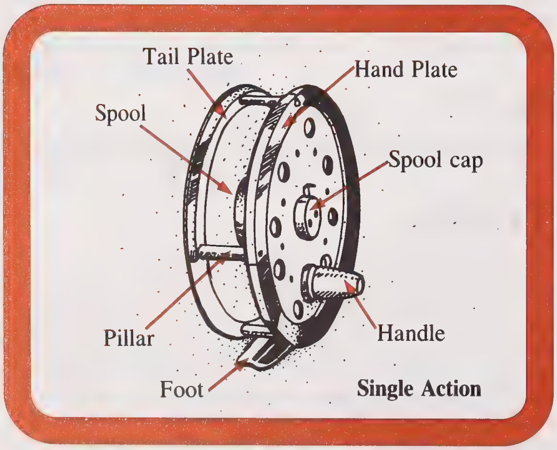
The Rod

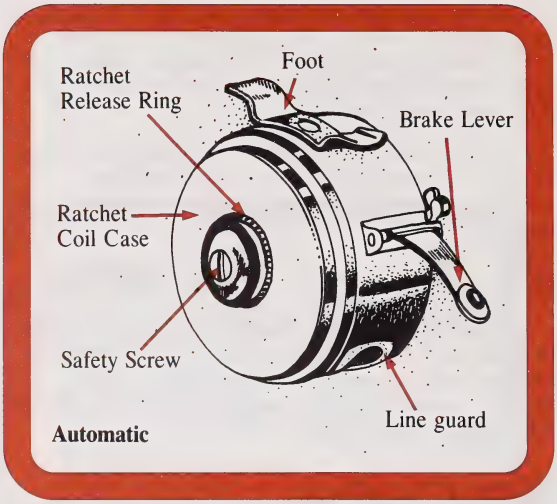
Fly rods are usually between two or three metres (six to nine feet) long. The most sensitive rods are made of boron or graphite, although some bamboo rods are available. Because of their length, most fly rods come in two pieces. It is important that the ferrules (joints) fit tightly. There should be one line guide per 30 centimetres (one foot), as too few guides will cause the line to slap when cast. The first guide (the stripping guide) from the reel should be made of aluminum oxide and should be about 50 centimetres (20 inches) from the front of the rod grip.

There are three different types of fly rod "action". In fast action rods, best suited for dry fly fishing, most of the flex is at the tip. Medium action rods, generally used for wet fly and nymph fishing, flex down to about the middle, while slow action rods used with streamers, flex all the way down to the butt.

The Reel

Fly reels are different than other reels because they really play no part in casting the lure. Of the three elements of angling, rod, line and reel, the reel is the least important in fly fishing. The reel is largely for storage of the line and provides balance to the rod. The reel is mounted at the very back of the handle and helps to counter balance the weight of the rod.



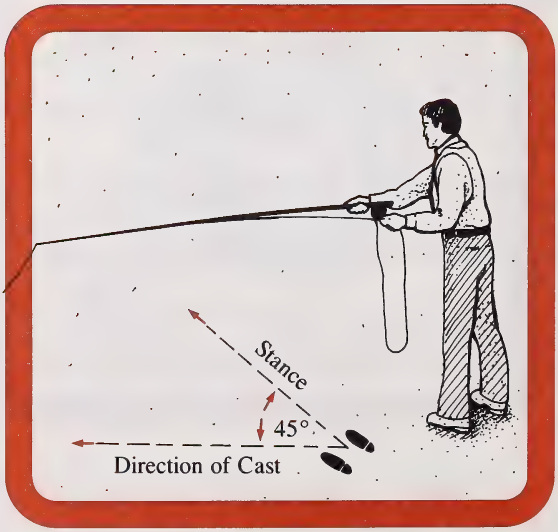


There are two basic types of fly reels: single-action and automatic-action. Single-action reels are the standard hand-operated action, while automatic reels will wind in all loose line at the press of a button. The automatic reel has a spring that must be wound up like a clock to make it operate.

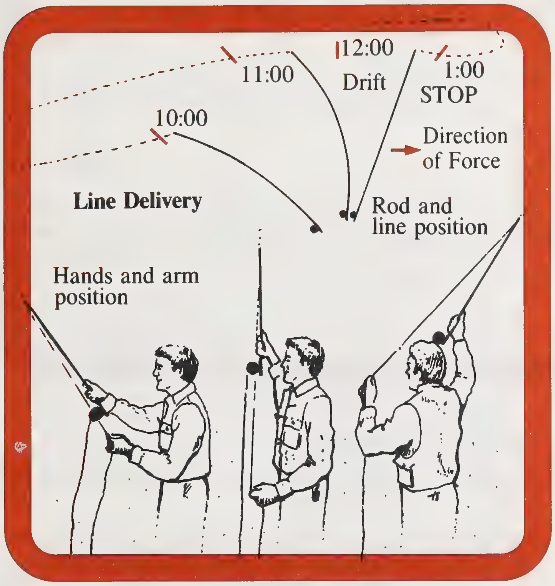
Fly reels have a revolving spool that should be filled with line to within less than a centimetre (three-eigths of an inch) of the rim. Usually, the first 30 meters of line is fly line and the rest is backing line of seven to nine kilograms (15-20 pounds test) monofilament or braided line.

The Cast

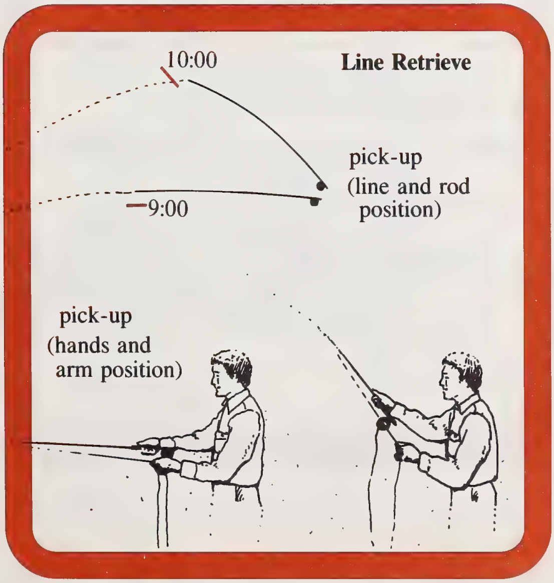
The three basic elements of fly casting are the stance, the line delivery and the line retrieve:



The Stance - Your feet should be separated a comfortable distance apart (shoulder width) and should be planted about 45 degrees from the direction of the cast. Your grip on the rod should be firm but not tight. The thumb can be placed either on top of the rod grip or down a bit on the side. The index finger is placed either along the side when gripped or just rested along the top of the rod, giving some support to the wrist. The important thing about the grip is that it should be comfortable at all times.



Line Delivery - There are several different ways to cast in fly fishing depending on the type of fly and type of line.



Line Retrieve - The method you retrieve your line will depend upon the type of fly being used and the type of insect or fish being imitated. The fly can be retrieved in short jerky pulls, slow steady movement or quick steady movement. The line can be retrieved by pulling it with the fingers and holding it in the palm of the same hand. This will produce a jerky or slow retrieval and will set up the line for the next cast.

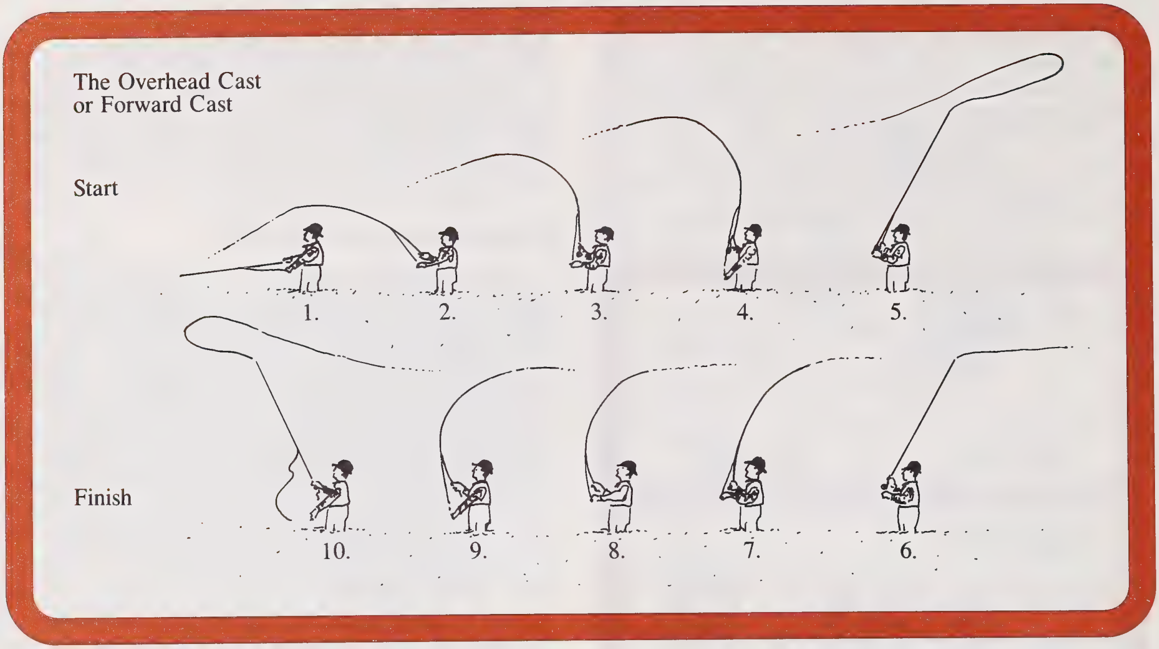
Overhead or Forward Cast

When beginning to cast a fly it is necessary to get a number of meters of line out of the reel. This is done by false casting. False casting is an overhead cast in which the fly and line do not touch the water, but move forward and backward in the air as you slowly add line to lengthen the cast. Move the rod briskly between the 10 and one o'clock positions. With your free hand, pull out about a metre of line from the reel. As the loop of line begins to straighten out on the forward throw, release the line from your free hand and it will shoot through the guides as the line straightens. Repeat these moves until enough line is in the air to reach the desired distance and then allow the line to settle on the water.

After retrieving some line prepare for the next cast. Pick up the line out of the water by extending the arm holding the rod out towards the fly and raise it to about the 10 o'clock position. Most of the line should now be off the water. Very slowly, keep the rod going backward until only about half a metre of the leader and the fly are still on the water.

Once the pick up is made, you start the back cast. Keep the rod moving backward, increasing the speed smoothly and rapidly. Stop the rod at the one o'clock position. Now, let the arm and shoulder drift backward about 15 centimeters (six inches), but keep the rod held in the one o'clock position. Do not bend the wrist back too far on the back cast. If the cast is done properly, the line should arc out behind you and straighten out parallel to the ground at about the height of the tip of the rod. The whole movement is brisk and flowing. Don't just sweep the rod through the air; make it bend as you move it backward. Without a good back cast, a good forward throw is impossible. It is important that the line be extended fully back before a forward cast is begun. If it is not, the forward pull will snap the fly off of the leader.

To make the forward throw, accelerate the rod forward with a smooth and brisk motion. Try to use shoulder and elbow motion during the cast. When the rod reaches the 11 o'clock position, stop its forward motion. The line will then arc through the air, and as it straightens out and lands on the water, let the rod drift down slowly to the nine or 10 o'clock position. Now your cast is complete.



The Overhead Cast
or Forward Cast

Typical Fly Casting Problems and Correcting Them

LOW BACK CAST

Problem - Fly line hitting water or land on back cast.

Solution - Use a brisk backward movement, keeping the wrist stiff when making a back cast. Also stop the backward power strokes quickly at the 1 o'clock position.

WIND KNOTS

Problem - Knots forming in the leader during a cast.

Solution - Accelerate the rod through the power strokes smoothly. Don't snap the rod.

LEADER AND FLY HITTING ROD ON CAST

Problem - Leader and fly contacting the rod during the cast.

Solution - Same as with wind knots.

LINE PILING UP DURING CAST

Problem - Line and leader piles up during the power stroke and does not fully straighten out at the end of the power stroke.

Solution - Accelerate the rod in the power stroke briskly between the 11 o'clock and one o'clock positions, stopping it quickly at each end. Also, do not let any line slip from your left hand during the power stroke.

CRACKING THE LEADER

Problem - Cracking the leader or snapping off the fly on the back cast.

Solution - Use sufficient force during backward power stroke and don't start the forward power stroke until the line has straightened.

SLAPPING WATER

Problem - Line leader and fly striking the water too hard on the forward stroke.

Solution - Stop forward power stroke abruptly at 11 o'clock, not any lower.

LINE WON'T GO OUT

Problem - You can't get much line out into the air during false casting.

Solution - (1)Use between 11 o'clock and one o'clock for your power stroke.

(2)Do not feed line from your left hand until the power stroke has finished and the line has straightened out.

Ice Fishing

Fishing through the ice will allow you to add many more months to your fishing season. Because fishing is done through a small hole in the ice, the techniques are different than open water fishing.

In Alberta, you are allowed to use three lines when ice fishing. You may choose to use one or both of the two distinct ice fishing methods: still fishing or jigging.

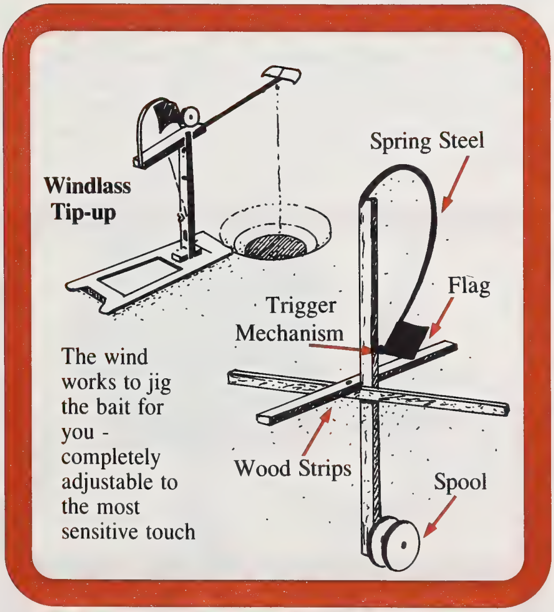
Still fishing is basically a waiting game. The rig is set up and the bait lowered in an area where the fish are usually found, and then the angler waits for the fish to take the bait.

Jigging or hand fishing is holding a line and moving the lure in an up and down motion to attract fish.

The Rod

Most people do not use good fishing rods for ice fishing, as the conditions will create a lot of wear and tear on equipment.

Ice fishing rods are from 45-90 centimeters (18-36 inches) long. They range from light action (small fish) to heavy action (large fish). Some have a reel, while others have two pieces of wire near the handle to wrap the line around. The line is pulled with the hand to the desired depth. Many people just use a stick 30-45 centimeters (12-18 inches) long as a rod. The line is wrapped end-to-end around the stick, held in place by notches at either end.

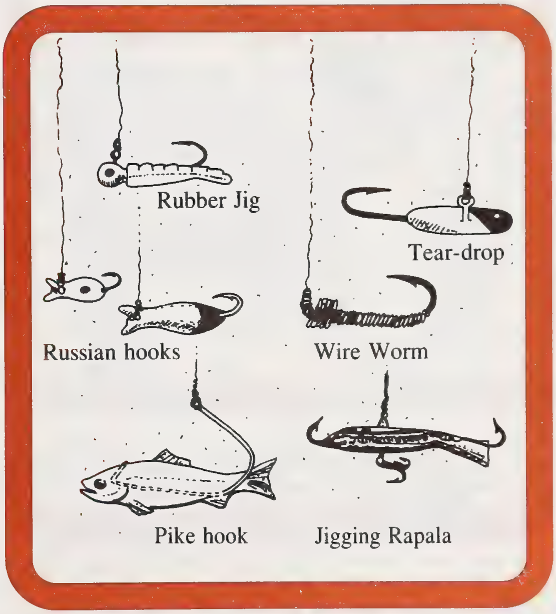

Windlass Tip-up
Spring Steel
Flag
Trigger Mechanism
Wood Strips
Spool
The wind works to jig the bait for you - completely adjustable to the most sensitive touch

Tip-ups are often used instead of a fishing rod. They perform two functions: holding the line at a desired depth, and signalling when a fish has struck the bait. When a fish grabs the bait, the tip-up releases a flag or signal device, to alert the angler that the bait is taken. The reel is often sitting under the surface of the water to prevent freezing. Above-water tip-ups are more sensitive to the touch than these, but the line will freeze into the hole.

Most tip-ups hang motionless in the water, but the windlass tip-up has a system in which a rudder on the end of the tip-up hangs above the hole and high above the water to catch the wind, giving the bait some movement.

The Lure

Almost any lure used during the open water months can be used for ice fishing. Because lures have a different action during ice fishing (largely restricted to up and down movements), most fishermen use bait of some sort when ice fishing. Some commonly-used baits are worms, minnows, smelts, maggots, meal worms and cheese.



You will probably find fish on or near the bottom, but if you don't get any action at the bottom you should try different depths. Fish may even be found right under the ice because of low oxygen levels near the bottom.

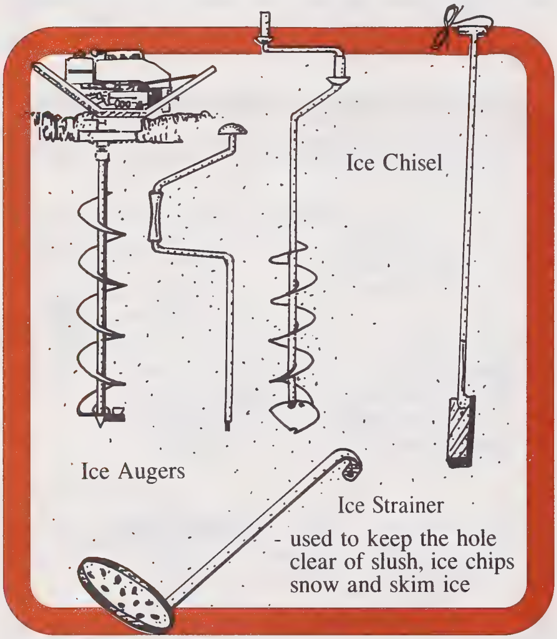
You want to make sure your lure is as natural-looking as possible. It seems to help to entice fish to strike if you tie the hook on your line so that it sits at 90° to the line.

When you are fishing, there are several ways to present your lure. You could use some quick jerks of the lure to attract the fish, then either make some smooth slow movements, or just let the lure sink near the bottom, 4 to 6 inches and sit there for about 30 seconds then start the process over again.

Another technique is the slow lift and flutter method. Raise the lure slowly a meter or a metre and a half off the bottom. Then drop your arm quickly, allowing the lure to flutter toward the bottom. Stop the lure just before it hits bottom, wait 10 to 15 seconds, and repeat.

Most fish don't seem to strike the lure as hard in the winter as they do in other months. Usually, you will feel just a light tug or twitch on the line as the fish takes the lure.

Other Ice Fishing Equipment


Ice Chisel
Ice Augers
Ice Strainer
- used to keep the hole clear of slush, ice chips snow and skim ice

Tents

Fishing shelters can be as simple as a plastic bag or as elaborate as a tent. They serve two functions: protection from the elements, and to provide darkness, allowing you to look down into the hole. For spotting fish (where water is clear enough), the shelter must be completely lightproof and be made of a dark color to block out all light inside. Some anglers just crawl inside an extra-large garbage bag, or lay a tarp or mattress on the ice and throw a blanket or piece of plastic over their heads.

Bow Fishing

Bow fishing is taking a fish with a bow and arrow. The basic equipment required is: a hunting bow, with a bowfishing reel, loaded with heavy fishing line and attached to an arrow that is tipped with a barbed fish point.

The Bow

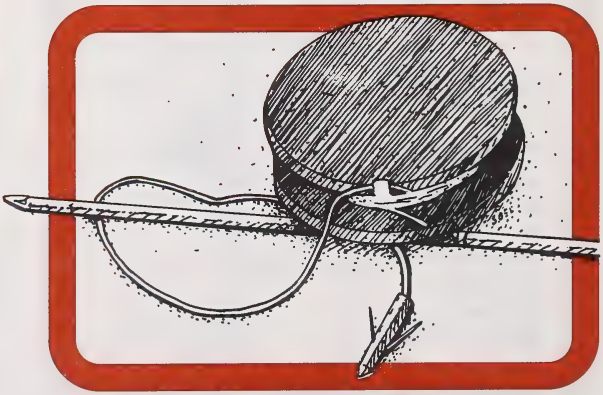
A bow of at least 18 kilograms (40 pounds) is advised to allow you adequate depth penetration through the water. Even at this weight, your maximum penetration will be two or two and a half meters of water.

The Reel

There are basically two types of reels used: the hand wraps and spin cast reels. Hand-wrap reels are the most commonly used bowfishing reels, mainly because of its simplicity and low cost. After your shot, you wrap the line back on your reel by hand. The average reel will take about 30 centimeters (one foot) of line per wrap, so in a matter of seconds, six to nine meters (20 to 30 feet) of line (an average shot) can be back in place, ready for the next shot.

The shoot-thru reel is a variation of the basic hand-wrap reel. Its diameter is much larger, allowing you to actually shoot through the middle of the reel. Rewinding is the same, except that you take in at least twice as much line with each wrap. Most hand-wrap reels come in two styles: tape-on reels which can be strapped to the front of the bow or screw-in reels which can be screwed into a factory installed insert in the front of your bow.

Spin casting reels used for angling can be adapted to bowfishing. To use these reels, you must install a reel holder on the front of your bow for the reel to sit on. You can design your own, or purchase holders that are threaded to screw into the stabilizer insert on the front of your bow.



Line

The quality and strength of your bowfishing line can mean the difference between success and failure. Thirty-six to 45 kilogram (80-100 pound) test monofilament or braided nylon is suitable. The strongest line with the smallest diameter is the best, as it will allow the reel to hold a maximum amount of line. The strength of the line is not only important in ensuring that your fish is secure; it also pays off if you accidentally stick your arrow into logs or other bottom debris.

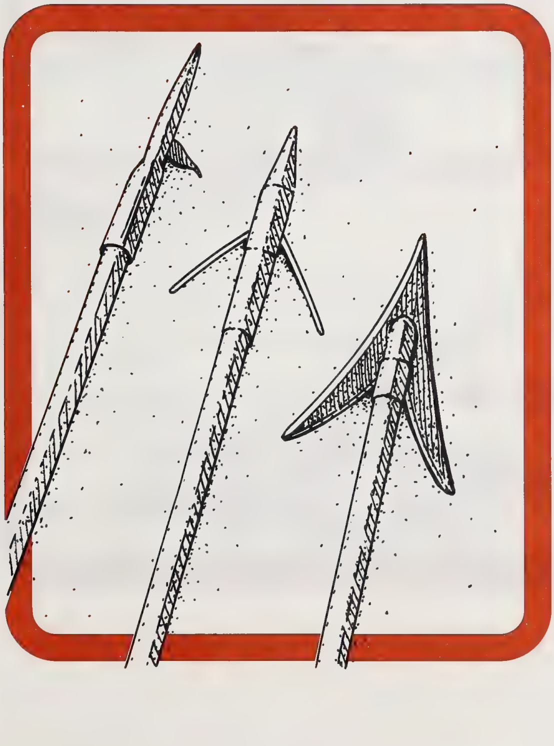
Before using, make sure that a good knot is used in tying your line to the reel as well as to your fishing arrow.

Arrows

Solid fibreglass arrows are most often used as they will not bend and rarely break. Fishing arrows are made with a hole in the neck for the line. You may want to slightly enlarge this with a drill to accommodate heavier line as well as to speed up rethreading if you lose an arrow. They are usually fitted with a rubber fletch which is totally unnecessary and should be removed.

Although you will seldom lose an arrow, always have at least one spare to avoid having an enjoyable bowfishing trip cut short.

There are a wide variety of points available for bowfishing. Constantly check the point for straightness and keep it sharp.

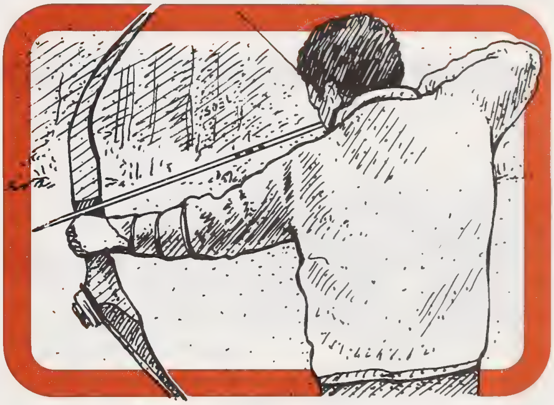


Accessories

Good polarizing sunglasses fitted with blinders, worn with a peak cap, are a great advantage in reducing the glare on the water's surface. A file is needed for sharpening your points, and a net is needed for retrieving fish.

The Technique

Shooting ability is important. You might want to practice in your backyard or other safe outdoor location. Stand on a chair and practice shooting objects set out at various distances on the lawn. Accuracy is important, as is mastering the skill of shooting without getting the trailing line tangled. Remove unnecessary equipment, such as sights and linequivers. Should your line catch on clothing, fingers, cableguard, bow sling, reel or rest, it will at best cause deflection in your shot or snap the line. At worst, it may cause your arrow to come right back at you. While bowfishing, constantly check your line and where it is lying to avoid a possibly dangerous situation.



Once your basic shooting skills are polished, your greatest challenge will be understanding and overcoming the problems of refraction. Refraction is the bending of light by the denser medium of water causing the image to appear higher. Unless a fish's back is out of water or you are directly above it, you will have to shoot lower than where you perceive the fish to be, in order to hit it. Only a lot of shooting at underwater targets will help you to increase your accuracy.

Although sights are of no use, there is one little trick that will help you. For every 30 centimeters (one foot) down, lower two and a half centimeters (one inch) and for every one and a half meters (5 feet) away, lower another two and a half centimeters (one inch). For example: A fish that is in one meter (3 feet) (lower 3 inches) and five meters away (15 feet) (lower 3 inches) would require you to shoot 15 centimeters (six inches) low.

Catch and Release Fishing

Regulations in some areas require sportfishermen to release fish under or over certain sizes. More and more sportfishermen are choosing to release most of their catch to ensure good fishing for another time. These people should be commended for their conservation awareness and attitude.

How a fish is handled when the hook is removed can greatly affect its survival. If the fish is handled carefully and gently and a few precautions are taken, it will have an excellent chance of survival.

Once a fish has been hooked, retrieve it quickly and release it. Excessive exertion on the fish by playing with it for a long time can be a contributing factor to subsequent mortality.

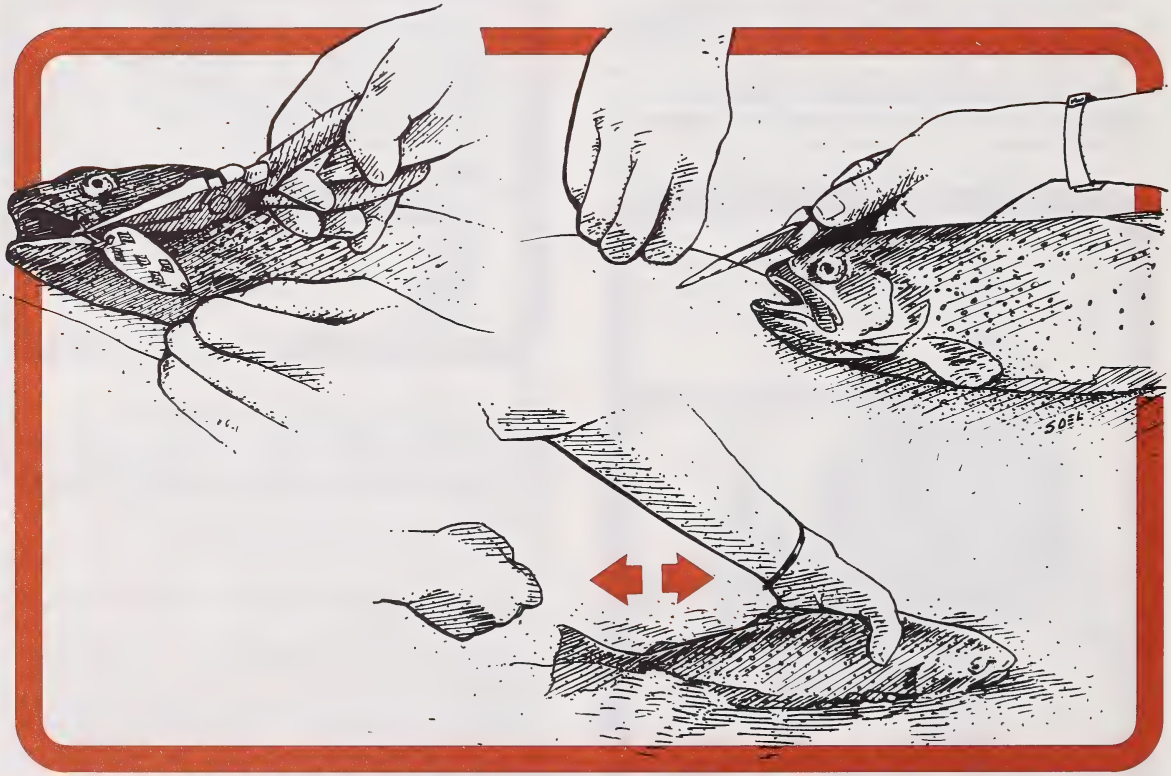
Where a fish has been hooked is a major factor in its survival after release. Hooks that are in the corners of the mouth or in the front part of the tongue do very little damage to the fish. Such hooks should be removed by grasping the shank of the hook (either with your fingers or needle nose pliers) and using the weight of the fish to pull the hook out. This way you do not have to touch or squeeze the fish.

If you have to hold the fish to remove the hook, use dry hands and hold the fish gently behind the gill area. Squeezing the fish hard can damage the internal organs and cause death. Keep your fingers out of the gills as these organs are fragile and easily broken resulting in excessive bleeding.

If the hook is on the back of the tongue or in the lower gill area, care must be taken in removing the hook so that no damage occurs to the gills. Damaged gills will often be fatal.

If the fish has swallowed the hook deep into its throat, do not attempt to remove it. Instead, cut the line and leave the hook in the fish. The saline body fluids of the fish will dissolve the hook and the fish has a very good chance of survival.

If the fish has lost consciousness and floats on its side, hold it in a normal swimming position and gently move it back and forth in the water. This will move water over the gills and allow more oxygen to enter its blood. Most fish regain consciousness in a minute or so and readily swim away.



Care of Fishing Tackle

Proper care and maintenance can add many years to the working life of fishing tackle. The following tackle care tips will help to prevent problems. Any tackle used in salt water requires much more care than tackle used only in fresh water.

The steps recommended below should keep any equipment in excellent working order. How often these steps should be followed depends entirely upon how often the equipment is used and the conditions it was used under.

Rods

(1) Wash rod and guides with soap and water. Rinse with warm water and hang up to dry.

(2) Clean ferrules and add a very light coat of oil to metal ferrules.

(3) Check rod guides for wear or looseness. Have repairs done if necessary.

(4) Clean out reel seats.

Lines

(1) Check all lines often for signs of wear, rot, aging, nicks and cracking.

(2) If cracking is confined to the last few feet of fly line, clip off the damaged section.

(3) If fly line is double tapered and shows cracking at the front, reverse the line.

(4) Check for nicks, abrasions and weak spots in monofilament. Test its breaking strength.

(5) With braided line, check for dark spots that signify rot. Test its breaking strength.

(6) With leaded and wire lines look and feel for breaks or metal fatigue.

(7) If a line shows any kind of wear or weakness, discard it.

(8) Store all items in a cool, dry place out of direct sunlight.

Reels

(1) Oil very sparingly.

(2) Release the drag tension after use to eliminate spring stretch.

(3) Check the reel's operation and have any worn or broken parts replaced.

(4) Be extremely careful with your reels around dry, dusty, or sandy areas. Dust or sand can cause your reel to seize up.

(5) Check for any loose screws on the reel and tighten them.

General Tackle and Accessories

Tackle and accessory equipment deserves equal care and maintenance time.

(1) Remove all tackle from tackle box at least once a year.

(2) Wash lures etc. with hot water, rinse and dry.

(3) Examine all lures for problems or rusty hooks.

(4) Sharpen hooks if necessary.

(5) Wash and clean out tackle box.

(6) Wash out netting on nets with soap and rinse with warm water.

(7) Check waders for holes and repair if necessary.

(8) Store waders in a cool dark spot. Hang them upside down by the feet.

Handling the Catch

Table Fish

There are two ways to preserve good flavour in fish you keep for eating. Keep them alive or dispatch them and keep them cool and moist and out of direct sunlight.

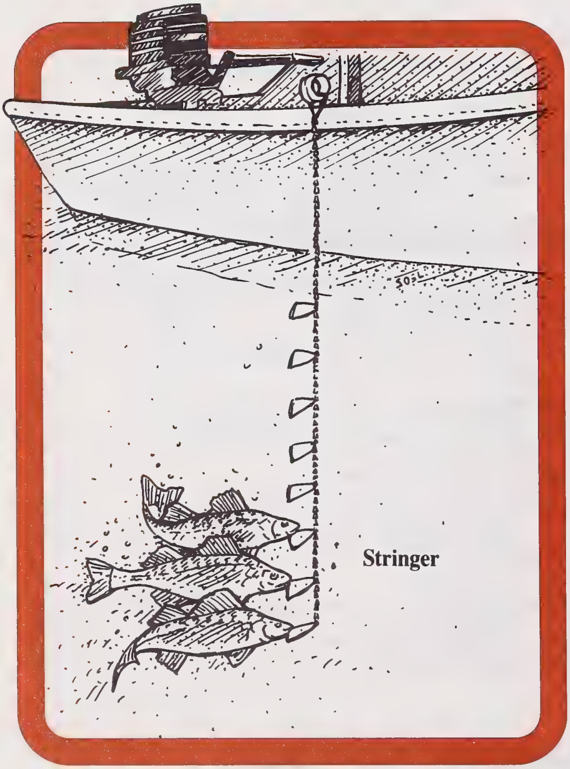
Field Care of Table Fish

Keeping Alive

Stringers are weighted lines with clips at intervals which are hung in the water beside a boat to keep fish suspended in the deep cool water, where they will survive longer. The stringer should be about two and half meters long, with a small weight at the bottom. The clips should have a space of about 10 to 15 centimeters (four to six inches) between them so the fish will not bunch up. The clips should be attached to the lower jaw of the fish. Lift the stringer out of the lake when motoring to a new spot.

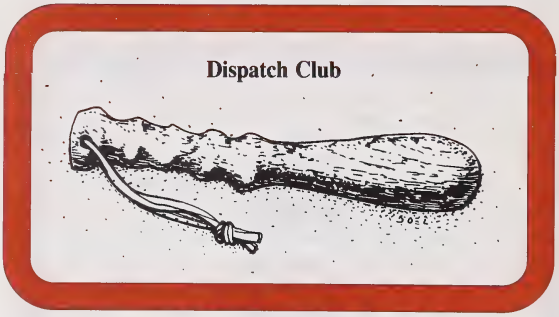
* This method is not suitable for catch and release as damage is done to their gills.

Another way to keep fish alive is to put them in a wire basket or cage hung over the side of the boat.



Dispatching Fish Quickly

The recommended method of killing fish is to administer a sharp blow to the area on top of the head behind the eyes. Grip the fish firmly behind the gills and set it down on something solid. The blow should be administered with a fairly heavy piece of wood or pipe. Axe handles or hammer handles are excellent for this purpose.



Trophy Fish

You may wish to take a very large fish to a taxidermist to have it mounted. How you handle the fish before you reach the taxidermist can make a big difference in the quality of the mount.

Field Care of Trophy Fish

The main concern is prevention of damage to the scales, skin and fins. The other main problem is retaining as much residual, or "caught" color in the fish skin as possible. As in all types of taxidermy, the better condition the specimen is in when the taxidermist works on it, the better the end result will be.

Wrapping the fish in wet towels and packing the fish directly in snow or ice, are good methods for preserving the eating qualities of fish but will not retain the color. A common error is placing the fresh fish in a plastic bag. Loss of color is almost immediate with this method.

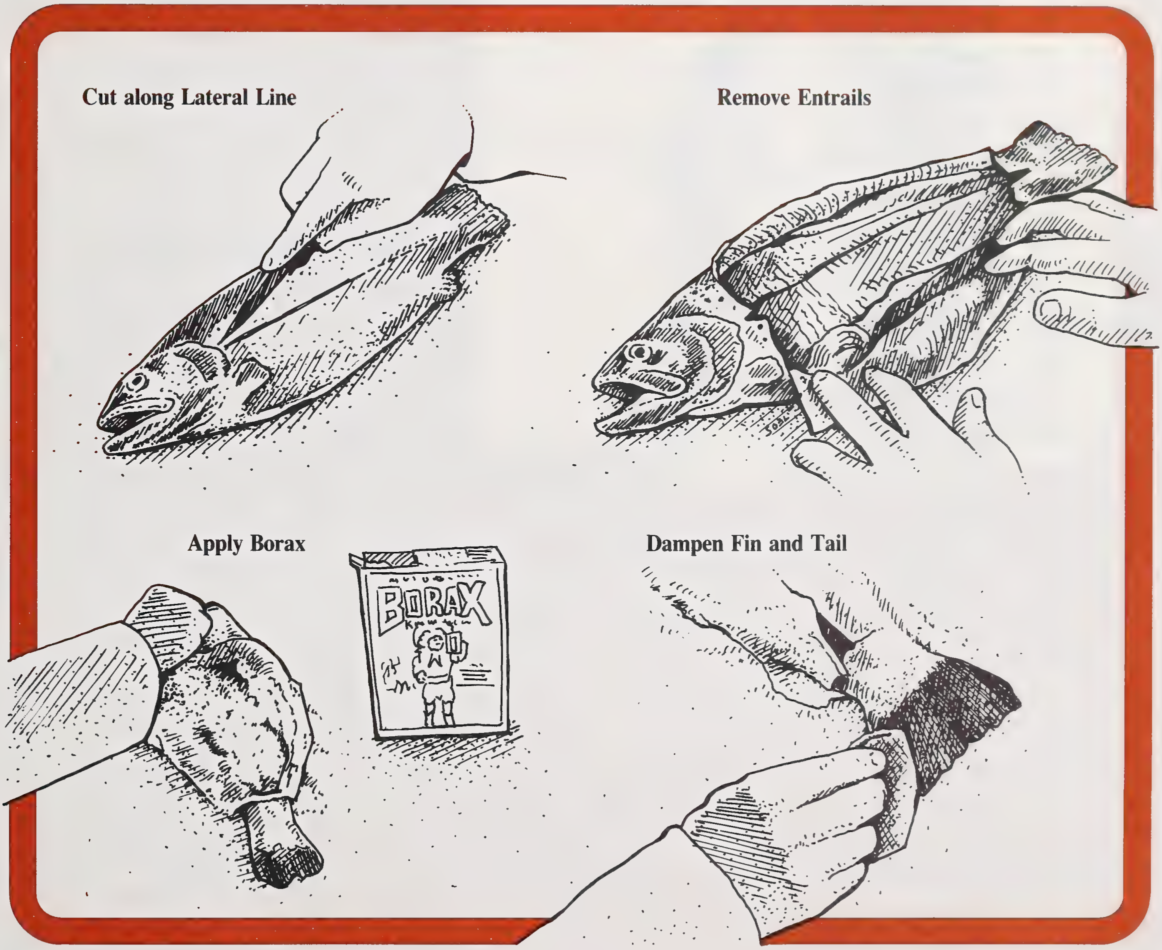
Some fish retain natural color better than others. Large-scaled warm water species such as pike tend to retain natural color, while the finely scaled cold water fish such as trout fade rapidly and in irregular patterns if not cared for properly.

Powdered borax, available in grocery stores, when applied to the fish skin, maintains residual color. It is only necessary to gently rub a small quantity of borax over the entire fish, including under all fins. Once a fish has been treated with borax, it is no longer fit for human consumption.

After a fish has been boraxed, it should be kept in the shade or out of direct sunlight until it can be frozen. To transport the fish home, wrap it in a dry towel or cloth sack and place it on a board or cardboard to prevent bending. If a freezer is available, unwrap the fish and place it inside overnight. The next morning, the frozen fish should be securely wrapped in a plastic bag, again ensuring that the fins are protected, and placed back in the freezer until it can be taken to the taxidermist.

A fish can be properly cared for even under conditions where no refrigeration is available for several days. Cleaning the fish from the "off" or wall side is necessary under these conditions. The fisherman needs to determine the off or poorest side of the fish and then make a cut along the lateral line to remove the entrails. Apply borax to the outside and to the inside of the fish. Since the fish will be kept in a semi-dry state for so long, occasional dampening of the fins and tail with water is necessary to prevent complete drying. Reapply borax to areas where it may have rubbed off.

Whatever method is used to care for trophy fish, the importance of freezing as soon as possible cannot be over-emphasized.


Cut along Lateral Line

Remove Entrails

Apply Borax

Dampen Fin and Tail

Fishing Gear Checklist

General

☐ Fishing licence
☐ Fishing regulations
☐ Rod and reel
☐ Spare rod and reel
☐ Rod case
☐ Tackle box or fishing box
☐ Hooks
☐ Lures (spoons, spinners, flies, etc.)
☐ Bait
☐ Stringer or chain
☐ Sinkers
☐ Wire leaders
☐ Swivels
☐ Floats
☐ Leader material
☐ Fish club
☐ Net
☐ Knife
☐ Extra fishing line
☐ Pliers
☐ Survival kit
☐ First aid kit
☐ Pencil and notebook
☐ Sunglasses
☐ Camera and film
☐ Toilet paper
☐ Lunch box
☐ Thermos
☐ Waders
☐ Vest
☐ Extra socks
☐ Extra boots
☐ Rain-gear
☐ Cap
☐ Gloves
☐ Insect repellent

Include When in Boat

☐ Boating regulations
☐ Life jackets
☐ Oars or paddles
☐ Fuel tank
☐ Bailing bucket
☐ Outboard motor
☐ Suntan lotion
☐ Whistle
☐ Anchor
☐ Motor tie-down rope
☐ Anchor rope
☐ Tool box

Include When Ice Fishing

☐ Ice auger
☐ Extra blades
☐ Chisel
☐ Strainer (ice scoop)
☐ Gas for power ice auger
☐ Tip-ups
☐ Chair
☐ Ice fishing tent or shack
☐ Heater
☐ Fuel for heater
☐ Ice fishing rod

Cooking and Handling The Catch

Introduction

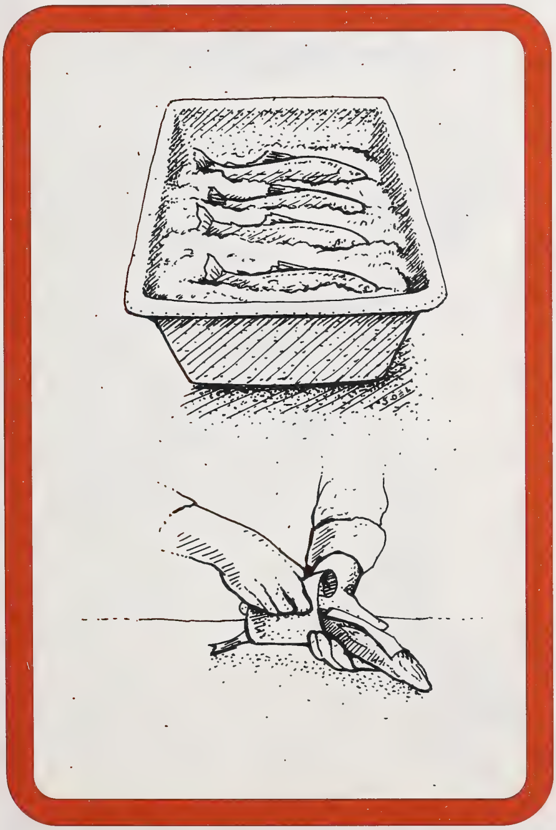
Fish are at their best when eaten fresh or soon after they are caught. It does not take long for the flesh to soften and lose its flavor and firm texture. Bacteria soon begin to grow on the skin, gills and in the insides, causing the fish to smell and eventually spoil.

However, these changes can be retarded when the fish are kept on ice. Fish will also spoil more quickly if they are handled roughly, which may cause the flesh to bruise and internal organs to rupture.

Handling the Catch

Chill freshly-caught fish as soon as possible by packing in flaked or finely-crushed ice. Place the fish, bellies down, between layers of ice in a clean container, preferably one with drainage holes in its base.

If ice is not immediately available, the fish can be held for a short time by wrapping in damp paper or cloth and storing in a cool place. To preserve quality, the fish should be cleaned, dressed and repacked in ice as soon as possible.



Cleaning and Dressing

1. Freshly-caught fish should be kept on ice, and cleaned as soon as possible.
2. Hold fish gently but firmly with one hand and insert the tip of a sharp, narrow-bladed knife or kitchen shears at the vent (anal opening). Cut the belly wall from vent to head. Move knife slowly.
3. Spread open the belly cavity and remove the viscera (internal organs), cutting them away at the throat if necessary.
4. With a spoon or suitably shaped knife, scrape away the line of dark red kidney attached to the backbone.
5. Remove the gills, if the head is to be left on, by pinching them out with the fingers or cutting them free with kitchen shears.
6. Wash the belly cavity and the outer surfaces with cold, clean running water.
7. Pack dressed, washed fish in flaked or finely crushed ice, or wrap tightly and refrigerate.

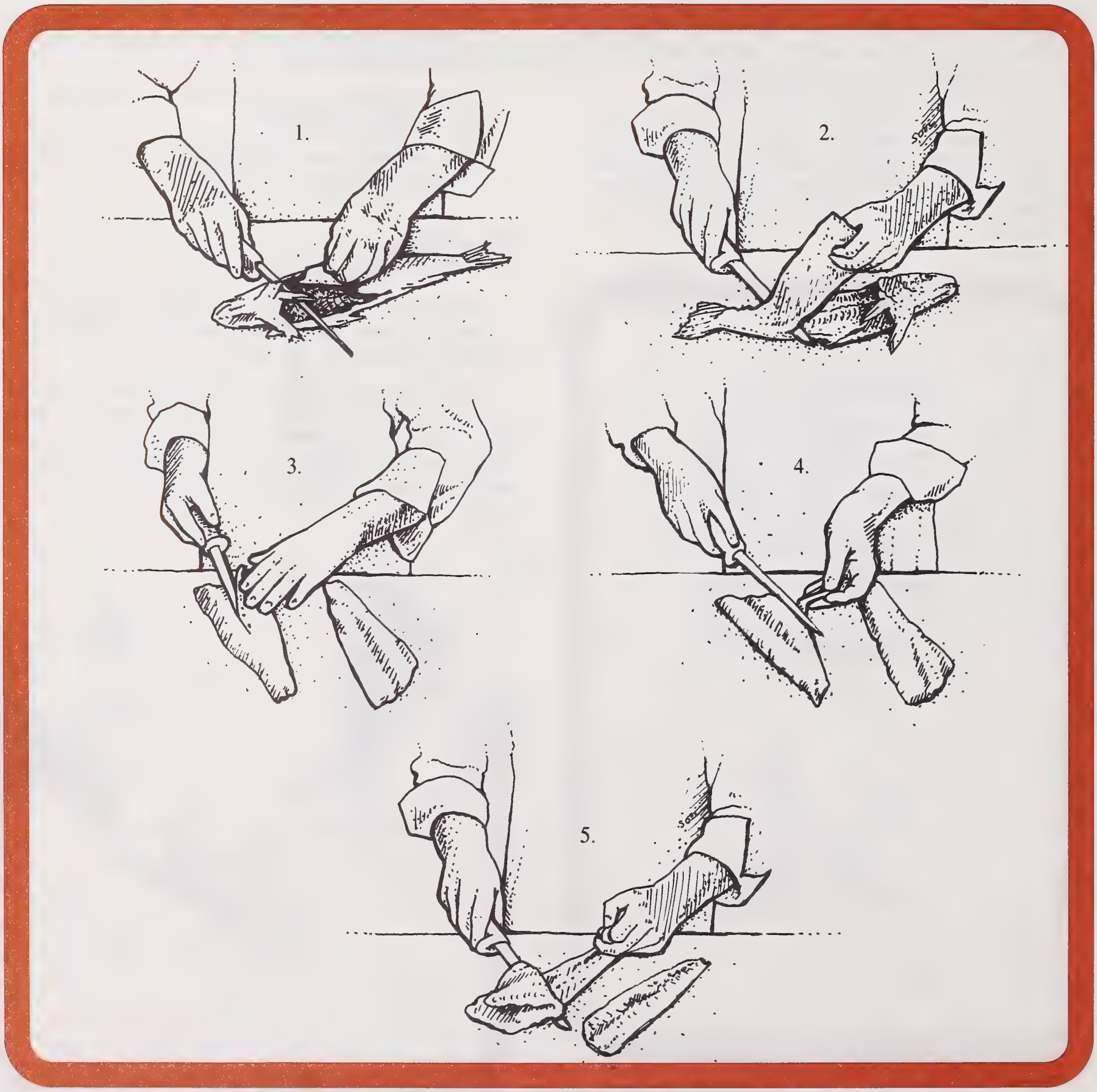
Scaling

Scale the fish after they have been cleaned. Scaling whole fish before cleaning can cause internal organs to rupture, contaminating the flesh.

Scale the fish on a cutting board or under cold running water. Hold the fish firmly by the tail with one hand and with the knife in the other, scrape against the scales, taking care not to cut the skin. A fish scaler may make the job easier. Rinse under cold water to remove loose scales.

Filleting and Skinning

1. Place fish on the cutting board with head to the right (left, if you are left-handed), and the back toward you. With a sharp knife, cut through the skin and flesh behind the head to the backbone.
2. Turn the knife to a flat position and cut with a sawing motion toward the tail, running the knife flat against the backbone. Turn the fish over and repeat to remove the other fillet.
3. The fillet will contain rib bones. To remove them, lay the fillet skin-side down with the side containing the bones to the left (to the right, if you are left-handed). Cut away the ribs carefully, by inserting the knife close to the bones and use a slight upward pressure of the knife against the underside of the bones, taking care to remove as little flesh as possible.
4. Trim away the fins.
5. Lay the fillet skin down, holding the tail end between the thumb and forefinger of one hand. Cut down and under the flesh, starting at the base of the tail. Keeping the knife at an angle, use a slight sawing motion and pull the skin toward you.



Canning and Freezing

Canning and freezing are the most common methods of keeping fish. Freezing is both easier and safer than canning.

Home Canning

Canning involves sealing the fish in a jar or can to keep out air and any outside sources of contamination, and then heating to destroy the bacteria which would cause the fish to spoil.

Eating improperly canned fish may result in serious, or even fatal, food poisoning. Fish should only be canned in a pressure canner, carefully following instructions to process the fish for a specified time at a specified pressure and temperature.

Freezing

Freezing fish does not stop them from deteriorating, it just slows the process. Fatty species (WHITEFISH, TROUT) should be frozen for no more than two months; medium-fat species (TULLIBEE) for no more than four months; and lean fish (NORTHERN PIKE, PERCH) for no more than six months. These maximum times are for storage at a constant temperature of -18°C (0°F), the average temperature of a home freezer. Fish may be kept longer at colder temperatures. Fish should be used sooner if your freezer is warmer than -18°C.

The changes that occur while fish is frozen include a gradual toughening and drying out of the flesh. The characteristic flavor which marks each species gradually disappears, leaving the fish somewhat bland. If fish are placed directly in frozen storage without a suitable airtight covering, the gradual loss of moisture will result in freezer burn, and the fish will spoil more quickly.

Prepare fish for freezing by cleaning and dressing, and filleting if desired. Each fish or fillet may be packaged separately, or enough for one meal may be wrapped together. Use freezer bags or heavy double-wrapped foil, excluding as much air as possible and sealing carefully.

Do not put too many fish in the freezer at one time. This will raise the temperature of the freezer, causing the formation of large ice crystals in the flesh, damaging its texture. Also be prepared to circulate these fish to ensure even freezing.

Thawing Frozen Fish

Most often fish can be cooked without thawing, but thawing the fish partially or completely before cooking is necessary when other preparation is involved (e.g. stuffing a dressed fish or separating fillets for breading).

Schedule thawing so that the fish will be cooked soon after it is thawed. For best results in both flavor and texture, do not keep thawed fish longer than a day before cooking.

In the refrigerator, 450 g of fish in a closed container or a well-wrapped package will thaw in 18 to 24 hours. In cold running water, fish may be thawed more quickly. Place whole dressed or pan-ready fish in a large pan or basin, cover with cold water and leave under a slowly running cold water tap. Keep steaks or fillets in a watertight wrapping, and allow one to two hours for a 450 g package to thaw completely.

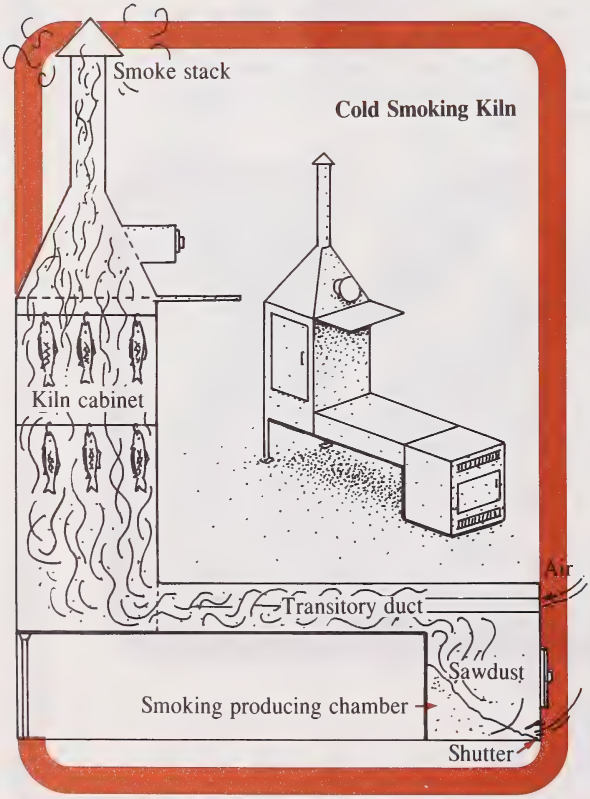
To use a microwave oven, wrap fish loosely in waxed paper, leave in unopened freezer wrapping, or place in a covered dish. Follow the manufacturer's instructions for your microwave, or thaw on LOW or DEFROST for four to six minutes per 450 g. Stop the oven half way through the timing period in order to turn the package, then complete the thawing. Let stand five to ten minutes. Rinse fish under cold running water.

Thawing at room temperature or by immersion in hot water is not recommended, as either will increase the amount of moisture loss. Thawed fish should not be refrozen before cooking because this will damage the flavor and texture.

Smoking

Smoking fish develops a good flavor and an attractive appearance, but should not be considered a method of preservation as were the older methods of smoking. In the smoking process, the combined effects of salting, drying and smoking -- although changing the physical characteristics of the flesh -- have only a very limited preservative effect. Smoked fish must be treated in the same way as fresh fish and may be kept in the refrigerator for up to six days, or frozen for later use.

There are two basic smoking methods -- hot smoking and cold smoking. In a hot smoking or smoke cooking process, the fish, following a drying period, are exposed to low temperature smoke to develop a good smoke flavor. The temperature is then increased during the latter part of the process to cook the fish, yielding a product ready to eat. With cold smoking, the fish are smoked at a low temperature for a relatively long time, yielding an uncooked product. Depending on the type of product, the fish may be eaten uncooked or it may need cooking before it is served. Some of the factors that influence the choice between hot and cold smoking include the end product desired, the fish species, the form in which it has been initially processed and the type of smoking equipment available.



Cooking Fish

There are many different methods of cooking fish. Some will work better with one species than another. Although some recipes call for a specific fish, other fish can usually be substituted with excellent results.

Preparing Fish for Cooking

1. **Whole Dressed Fish**

   Remove any scales and, if desired, trim away the fins and head. Wash well inside and out under running water and pat dry. Make shallow, diagonal incisions across sides and one along the back.

2. **Pan-ready Fish**

   Remove any remaining scales, wash well inside and out under cold running water and pat dry. Make shallow, diagonal cuts across the sides and one along the back.

3. **Fillets or Steaks**

   Use directly from frozen for some recipes, or thaw partially or completely. In any case, rinse well with cold water and pat dry.

Judging “Doneness”

Fish are best cooked rapidly at high heat. Because fish contains so little connective tissue, it does not need the long slow cooking that some cuts of meat require to tenderize them. The usual rule for judging doneness for any high heat method (except microwave cooking) is to measure the thickness of the fish through the thickest part and allow five to seven minutes per centimetre for fresh or thawed fish and 10 to 12 minutes per centimetre for frozen fish.

Fish has the best texture and flavor at the point where it is just “done”, when it flakes with a fork and the flesh has just become opaque, with no translucency even in the middle of the flesh.

Do not overcook. Overcooking dries and toughens fish.

Cooked fish is delicate and tends to break apart easily. For best appearance, handle fish as little as possible during and after cooking.

Baking

Baking is a good way to cook fish of any size: whole dressed, pan-ready steaks or fillets. Baking is done in an open dish or pan in the oven (if the container is closed or the fish is wrapped in foil, the method is called oven steaming). The surface of the fish tends to become dry during baking, so fish are usually brushed with melted butter or oil, or baked in a sauce.

Broiling

Broiling is suitable for small fish and for steaks or fillets from large fish, and is one of the simplest ways to cook fish.

Fish for broiling are usually cut 2 to 3 cm thick to prevent drying during cooking. Frozen steaks or fillets may be thawed first or cooked frozen. If you are broiling frozen fish, however, the broiler rack should be placed further from the element to prevent overbrowning.

Barbecuing

Barbecuing fish gives them a special flavor, partly from the fats, marinade and sauces used to keep it moist, and partly from the smoke generated when these drip onto the hot coals.

Use whole dressed or pan-ready fish, both large and small, and for steaks and fillets, either fresh or thawed. For the best barbecue flavor, the fish should be placed directly on the grill or in a barbecue basket. Barbecuing in foil is really a form of oven steaming.

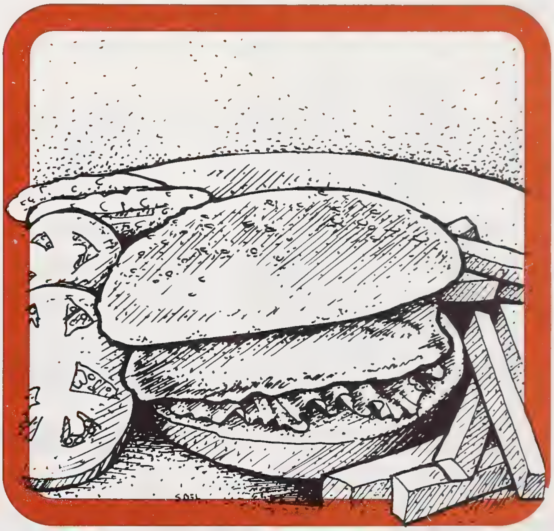
For best results and ease of handling, brush the clean, cold grill surfaces with a non-stick vegetable oil before placing the fish on the grill. Have a water-filled spray bottle at hand to control any flaming caused by the fat or marinade dripping onto the coals. Because cooked fish falls apart easily, turn only once, halfway through the cooking time.

Poaching and Steaming

Fish is poached by simmering it in liquid. Do not allow the liquid to come to a boil. Use a covered vessel of the right size to hold a single layer of the fish plus poaching liquid, which can be salted water, milk, fish stock or court bouillon. An electric frying pan is a good choice for small fish, steaks or fillets.

A fish kettle, which has a rack for holding the fish above the boiling water, is useful for steaming large fish. For small fish, steaks or fillets, a steamer insert in a saucepan works well.

Poached or steamed fish may be eaten hot or cold or used in salads, sandwiches or other dishes.



Oven-steaming

This is one of the most convenient methods for cooking fish and can be done in an oven, over a campfire or on a barbecue.

Prepared fish (in any form) are cooked in a covered dish or a sealed foil package. The natural moisture of the fish forms the steam which cooks the fish. Large fish may be seasoned and the cavity filled with any combination of herbs, lemon slices, onion, celery etc., or it may be stuffed with a seasoned bread stuffing. Small fish, steaks or fillets may be seasoned with salt and pepper and herbs such as basil, thyme, tarragon or dill.

Chowders and Stews

Certain kinds of fish are simmered (below the boiling point) with vegetables and seasonings in a large amount of liquid.

Deep Frying

Deep frying is suitable for skinless fillets or fillet portions from large or small fish and for very small pan-ready fish. Frozen fish should be thawed at least partially for even cooking. Fish may be coated with either a leavened batter for a thick coating with a smooth crisp exterior finish, or with a breading for a thinner, crunchy finish.

Deep frying is done in hot oil or shortening at 190°C (375°F). Cook a few portions at a time so the oil will stay hot. When the cooked portions are removed, the oil should be allowed to return to the frying temperature before adding other portions.

Pan Frying and Stir Frying

Pan frying is quick and simple, and a good choice for small fish, steaks or fillets.

For pan frying, the fish is dipped in milk or egg, then coated in seasoned flour, cornmeal, or crumbs (from finely crushed dry bread, crackers or cornflakes) and cooked quickly in a small amount of hot fat in a frying pan.

Stir frying is the Chinese method of rapidly cooking food in vegetable oil, using a wok.

Microwave Cooking

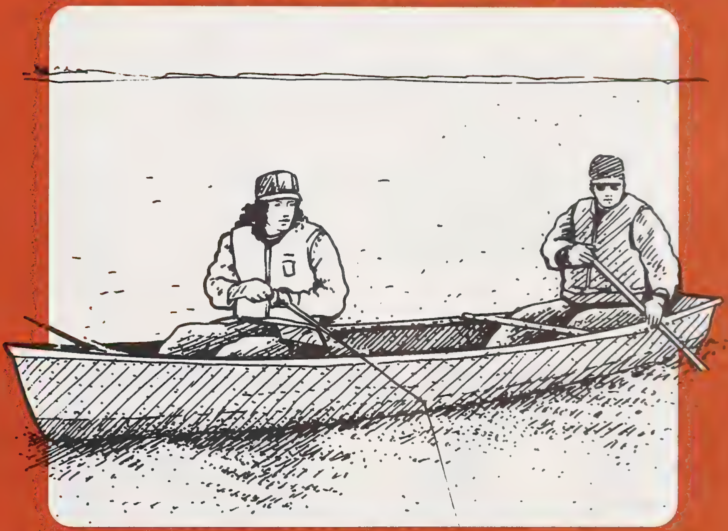
Microwave cooking is especially well suited for cooking fish. It is a version of oven steaming as the cooking is done by the heating of the moisture in the product through absorption of microwave energy. The fish is usually covered during cooking to prevent moisture loss and to prevent spattering.

Always thaw fish completely before microwaving to ensure even cooking. Ice absorbs microwave energy more slowly than water so the outer edges of frozen fish will cook while the inner part remains frozen. Follow the directions in any good microwave cookbook.

Nutritional Value of Freshwater Fish

A general evaluation of the nutrient composition of freshwater fish shows them to be 65 to 80 per cent water, 15 to 20 per cent protein and from 1 to 15 per cent fat. Protein is one of the most important nutrients supplied by fish and fish products. Their protein content is from 15 to 20 per cent, about the same as that of meat and poultry. The fat content of fish varies with species, the season and the location in which it was caught. Fat is in the form of easily digestible oils, and is mostly distributed throughout the flesh with some localized storage present along the backbone, the base of the belly cavity and under the surface of the skin.

Safety

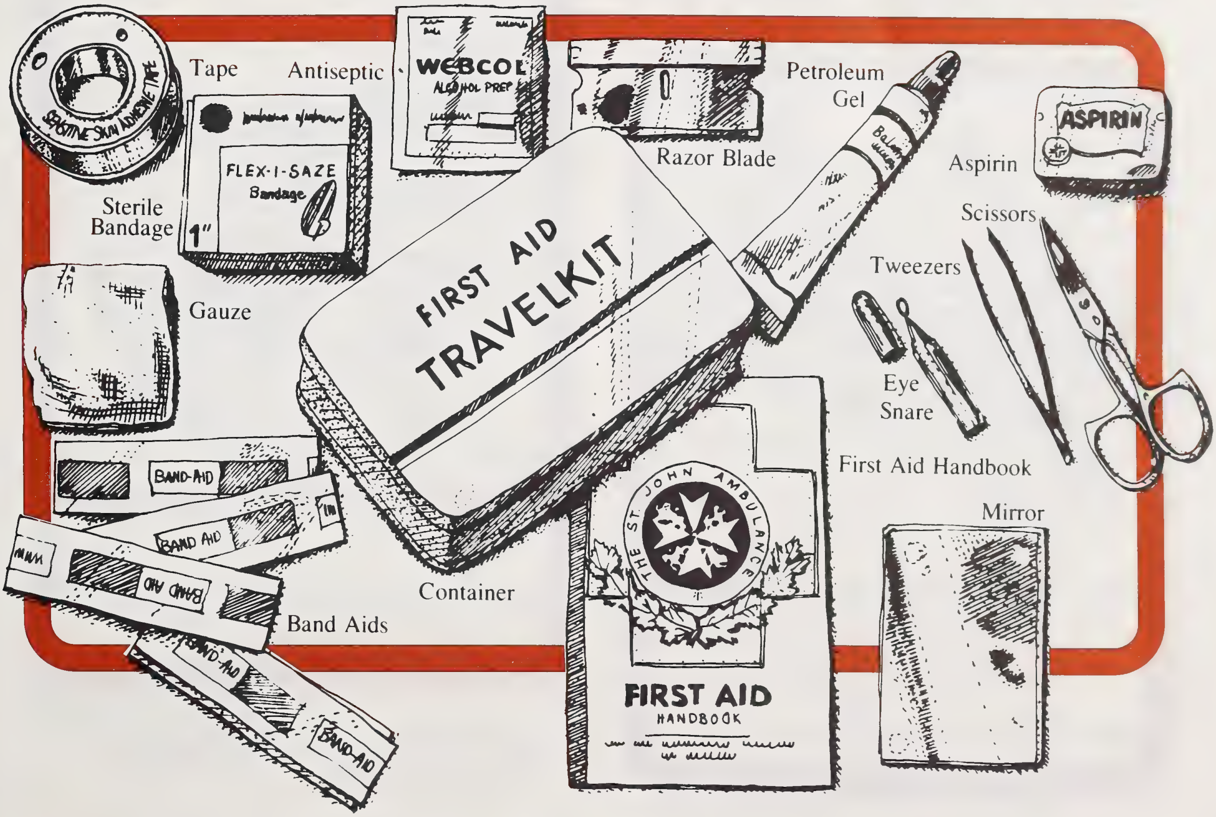


Introduction

Fishing is considered one of the safest outdoor sports, but accidents can happen. To avoid mishaps, knowledge of some common sense rules will help you enjoy fishing and the outdoors in safety.

Safety Considerations:

1. Be observant when walking near the water and step carefully. Moist tufts of grass often give way or conceal deep holes. Banks along streams and rivers can also be dangerous. Do not step too close to the edge as they may also give way.
2. Watch for rocks in or near streams because they are often covered with a slippery growth of vegetation. Do not jump from rock to rock.
3. Be careful using waders as they curtail movement. When using chest waders, a wader belt adds extra safety as air is trapped and helps with flotation.
4. Lightning often accompanies thunderstorms. When lightning strikes (grounds) it uses the most convenient conductor. A lone or tall tree affords the most suitable conductor. Therefore as a thunderstorm approaches, it is best to find shelter somewhere other than under an isolated tree.
5. Use care in handling fishing equipment, especially lures and hooks. Be alert to what you are doing and be careful not to hook anyone fishing close by. Be extra cautious when casting into the wind.
6. A practical first aid kit should be part of your fishing gear.
7. If you get into trouble, call immediately for help to a person close by.
8. Always try to fish with a companion.
9. Do not underestimate the swiftness of river currents. Cross where the current is slowest and angle towards the opposite bank walking upstream. Carry a walking stick to brace yourself.
10. If the current knocks you over, swim or float with the current. Keep your feet forward and up. Try to work your way to the nearest bank.
11. Fishing from log jams should be avoided because of slippery footing and instability of the structure. Currents around such obstacles can be extremely hazardous and if you did fall in, they could carry you under the logs and prevent you from surfacing.

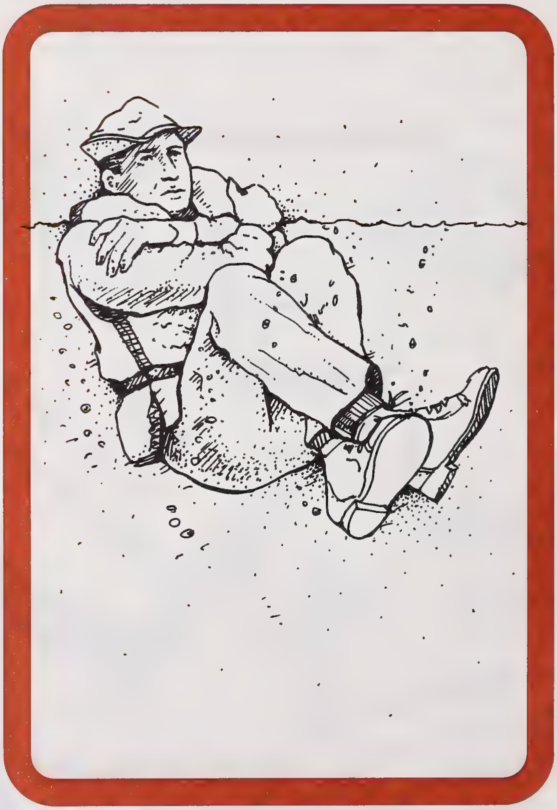


Boat Safety:

1. While in a boat wear an approved life-jacket or approved personal floatation device (PFD) at all times.

2. Obey boating regulations regarding fire precautions and fire extinguishing equipment.
3. Know your boat's limitations and keep your boat in safe working condition.
4. When fishing from a boat do not approach any closer than 200 meters upstream or 100 meters downstream of any weir or man made dam.

5. If you must move around in a boat, crouch low and keep weight on the boat's centerline and hold on to both gunwales (the lower the centre of gravity the greater the stability). Never stand up. Many fishermen have drowned when they stood up in a boat rather than going ashore to urinate.
6. At the onset of a storm, head for the nearest safe anchorage or landing.
7. If you fall in or your boat capsizes, get out of the water as quickly as possible. Climb into or onto the boat. Most boats will float, even when overturned or full of water. Curl your body into the fetal position, called the Heat Escape Lessening Posture (HELP). When two or more people are in the water, form a huddle so that the sides of your bodies are held closely together. This will help you survive longer while you are waiting to be rescued. Because 50 per cent of body heat may be lost from the head, do not use the "drownproofing" technique which requires that your head be in the water. If you are any distance from shore, do not attempt to swim.



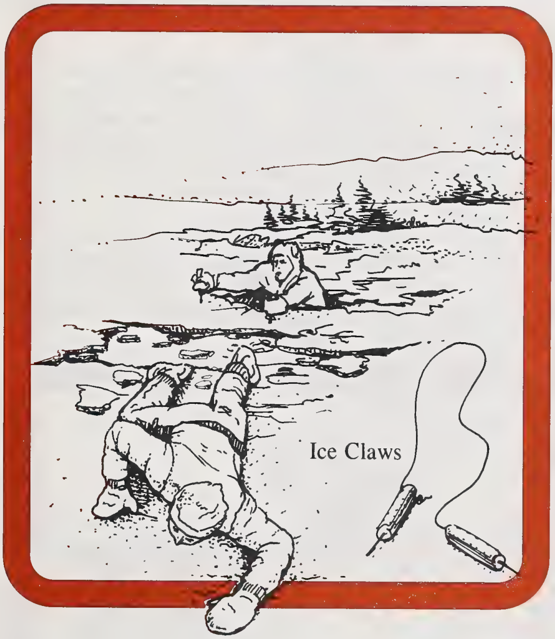
8. Assist any boat in distress. The waving of a piece of light colored material, or a light by night, are universal distress signals.

Ice Safety:

Each winter, ice-related accidents occur, many of which could have been avoided.

Careful measurement of ice thickness is essential. Stay off ice that is less than 10 centimeters (4 inches) thick and do not drive on ice that is less than 30 centimeters (12 inches) thick. Beware of ice near the mouths of inflowing streams, or streams which are flowing from lakes, springs and rivers. Black or grey colored ice should be avoided as it is generally an indication of thinner ice. Another indication of thin or weak ice is bubbles on the surface of the ice which may reflect water turbulence underneath. When ice fishing cut the ice hole as small as possible using an ice auger. Cutting the hole with an axe or chisel may weaken the ice around the hole and make it larger than necessary.

If you break through the ice, extend your arms flat on the ice surface and kick your feet to the surface of the water. Try to squirm the upper part of your body onto the ice. Roll quickly to one side away from the edge. You may have to break the thin ice ahead of you to reach ice thick enough to hold your body weight. If you have a knife or ice pick, use it to pull yourself out of the hole.



Once you are out of the water, you are not out of danger. You should move quickly to get dry and warm. If you have far to walk to reach shelter or your vehicle, stop on the shore to build a fire to warm yourself and dry your clothing. You should always make it a habit to carry waterproof matches with you.

Driving on Ice:

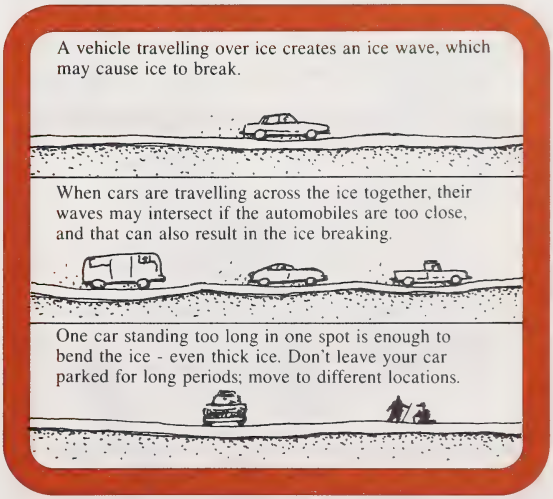
Mid-winter is generally the least dangerous time to drive on ice. Beware of ice in late fall or early spring. Even when the ice seems safe, it may not be.

Ice Driving Tips:

1. Remember that you cannot tell the strength of ice by looks alone. The strength is affected by temperature, thickness, size and depth of lake, age, water chemistry and under-ice "etching" (wearing away). New ice is generally stronger than old. Ice near shore is weaker.
2. Ice may measure 30.5 cm (12 in.) thick in one area, but be 2.5 cm (1 in.) a short distance away.
3. If there is snow on the ice, especially after rain; it adds an enormous burden. Consider this when judging ice strength.
4. "Booming" sounds, do not necessarily mean ice is dangerous; it's moving with temperature changes.
5. River ice will generally hold 15 percent less weight than lake ice. Straight, smooth stretches tend to be safest. Beware of ice over river mouths.
6. On a strange lake, ask someone who knows the area where there are thin spots, lakebottom springs and stream inlets.
7. Do not follow closely behind another vehicle. Each auto sets up a moving "wave" in the ice. Too many waves intersecting can break the ice.
8. There is a "critical speed" at which your car can crack the ice.

Water Depth (feet)	4	6	8	10	15	20	30
Maximum Speed (MPH)	9	11	12	14	17	19	22

9. Beware of much-used "roads" across ice. Repeated use may cause the ice to weaken. Other routes may be safer.



A vehicle travelling over ice creates an ice wave, which may cause ice to break.

When cars are travelling across the ice together, their waves may intersect if the automobiles are too close, and that can also result in the ice breaking.

One car standing too long in one spot is enough to bend the ice - even thick ice. Don't leave your car parked for long periods; move to different locations.

10. When driving on ice that has been cracked and refrozen, you should cross the crack at right angles. Do not park near ice cracks.
11. Drive with doors unlatched and open, windows open and seat belts off.
12. Get out of a sinking car in the first few seconds. Cars with closed windows and doors may float for minutes, but if you are not out instantly, water pressure may trap you - until the car is submerged and pressure equalizes.
13. If you park on the ice, be sure to move your vehicle from time to time. A car's weight bends even 30.5 cm (12 in.) thick ice as much as 2.5 cm (1 in.) within a diameter of 61 m (200 feet). Moving the auto lets the ice unbend. Do not park near other vehicles or both may fall through.
14. Take along a knotted rescue rope and something you can use as claws. Even a couple of big nails will help.

Hypothermia and Drowning:

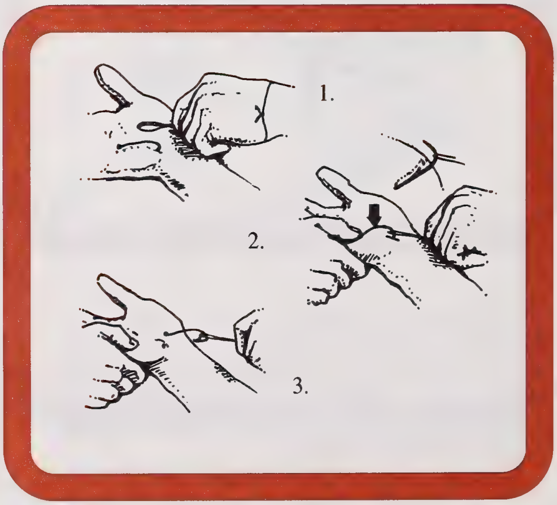
There have been a number of cases of persons who appeared to have drowned in cold water who have recovered without ill effects. If you are rescuing someone from cold water who appears dead, attempt to resuscitate him, and continue your attempts until you can get him to medical help. Do not give up.

1. Clear the air passage and begin mouth-to-mouth respiration immediately. Do not worry about getting water out of the patient's lungs.
2. When the patient has begun to breathe independently, place him in a sleeping bag or blanket to prevent further loss of body heat, but do not attempt to warm him. Warming will cause cold blood from his extremities to return to the core of the body. This may further lower core temperature and kill the patient.
3. Get the patient to the nearest medical facility. Do not permit him to walk. Transport the patient gently and keep him lying down, as still as possible.
4. If the patient does not start breathing, continue mouth-to-mouth respiration. Do not give up. Sometimes resuscitation takes a long time before a near-drowning victim will respond. The victim looks dead, with skin that is blue and cold to the touch. There may be no detectable heartbeat, breathing or any other sign of life. If other people are available, respiration can be continued while the patient is being transported to the nearest medical facility.

Hook Removal:

Physicians advise that deeply-imbedded hooks should not be removed until the patient can reach a doctor. However, when a fishhook is imbedded no deeper than a large sliver, the following technique will remove it quickly:

1. Remove hook from lure of line. Make a loop from heavy line and loop around wrist and between thumb and forefinger. If ice or cold water is available, use it to deaden the patient's feeling.
2. Place the loop over the hook and centre it on the middle of the curve of the hook. With your other hand, press down firmly on the eye of the hook to steady it. By pushing down on the eye of the hook and tightening up on the loop, the wound is spread open a bit and the barb has little bite.
3. Now, while applying downward pressure on the eye of the hook, pull sharply on the loop. This will pop the hook out in much the same direction as it went in. Be sure to pop the hook out hard and fast, in one motion.



Bear Safety:

Many sportsmen will be fishing in areas that are inhabited by bears, either black, grizzly or both. By learning about bears you will be able to develop a feel for where you might encounter them. People traveling on foot through bear habitat can increase both their safety and enjoyment by learning to interpret the various traces that bears leave when using an area.

Bears have very little fear, but one of the fears they have is that of human scent. While fishing in bear country it is wise not to wear colognes, perfumes, aftershave lotions or other scented material. Your natural body odor may be your best defence against bears.

Like all wild animals, bears have an "individual distance", inside of which sudden encounters will result in the fight or flight instinct being triggered. It is important that a bear be aware of your presence before that distance is violated in order that he may move away. Evidence suggests that making noise may help to alert bears of your presence, thereby lessening the chances of sudden encounters.

Try to detect bears when they are distant. If the bear is unaware of you, try to detour quietly, yet quickly, downwind and away from the bear. Use cover if it is available. Watch for the bear anyway, and remember that tree climbing is also a possibility. Try to climb the tree before, not after, the bear charges. Climb as high as possible given time and opportunity. If in a tree you should remain there until the bear has been gone for at least ten or fifteen minutes, and then quickly abandon the site and report the incident to proper authorities.

If the bear is aware of you and nearby, but has not acted aggressively, slowly back away, talking in as even a tone as possible to the bear, while waving your arms. Your actions should help the bear determine what you are, but they should not threaten it.

Bears will aggressively defend their cubs and food sources (carcasses, garbage dumps) - stay away from them. Grizzlies are normally much more aggressive than black bears in these situations.

In Case of Attack:

Bear attacks usually fall into one of two categories:

1. Predatory attack; and
2. Provoked attack.

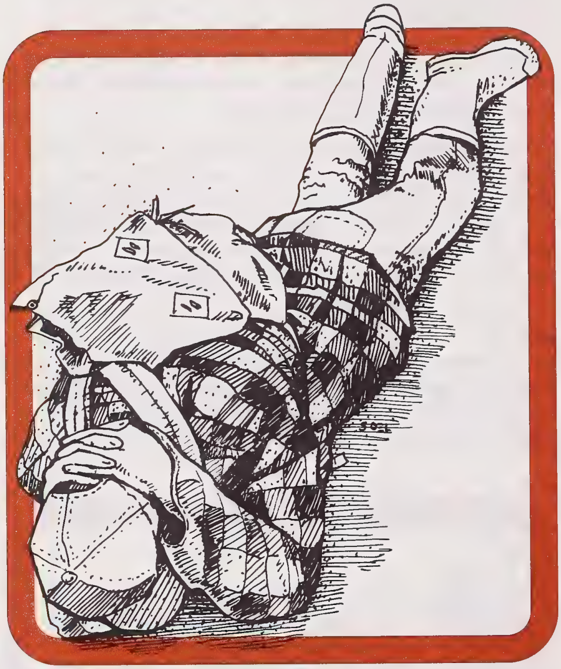
Realizing what type of attack you are faced with may assist you on what emergency measures you must take to prevent things from becoming worse.

On rare occasions bears have attacked people as prey. This is referred to as a predatory attack. In this case, playing dead is of no use. In most cases the best measure is to fight back with any weapon available. In some cases loud yelling and growling, not screaming, may be taken by the bear as aggression and could ward off an attack.

A provoked attack may take place if you accidentally infringe on a bear's territory. In a case such as this back away slowly and give the bear room to leave on its own. If the bear becomes aggressive this means it is probably trying to protect something. Do not be aggressive - in this case what the bear is looking for is a sign of submission.

These simple suggestions may be of assistance during a close encounter:

1. Lower your pack or jacket, or whatever else you have available, to the ground if the bear is a grizzly.
2. You should climb a tree until your feet are at least 10 meters off the ground if the bear is a grizzly.
3. Black bears can climb trees but may be less threatened if you climb out of their way. They may also take this as an act of submission and go away.
4. In the unlikely event of a charge, stand your ground; grizzlies sometimes make false charges.



If attacked by a grizzly, play dead, cover your face and protect your head and neck. The position of hands behind the neck, fingers interlocked, with the forearms and elbows protecting the face as much as possible is recommended. Leave your pack on if you have one and do not drop it to distract the bear. The pack should help to protect your body. Do not move until the bear leaves.

Camping Area:

It has been estimated that 95 per cent of all black bear attacks on man and two-thirds of all grizzly attacks were by bears that had previously fed on garbage left by humans.

Food Storage and Handling:

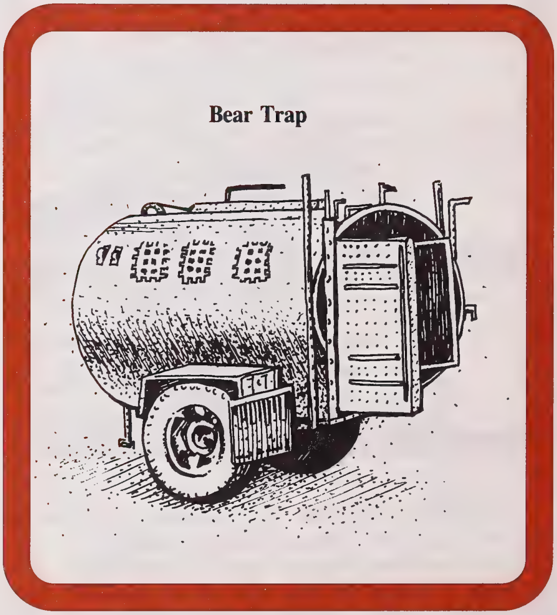
The use of metal storage drums and maintaining a clean camp will discourage a bear from remaining in the camp area.

1. Use metal storage containers.
2. Incinerate all leftovers, peelings, etc. Do not add these to the garbage pile or throw them away.
3. Use lids on food when cooking, especially when frying.
4. Keep cooking and eating area free of all garbage and grease.
5. In non-permanent camps, take all garbage with you out of the bush and hang all food in a tree for security.

Camp Layout:

1. Do not arrange your tents or trailers in a circle. An exploring bear will feel trapped with people on all sides.
2. The outhouse should be visible from a distance, so you can see any visiting bear before you encounter it.

Bear Trap



Alberta Fish and Wildlife officers must occasionally remove a nuisance bear from an area by live-trapping it. If you should come across such a trap do not approach it.

Warning signs are posted wherever a problem bear is known. Leave the area immediately.

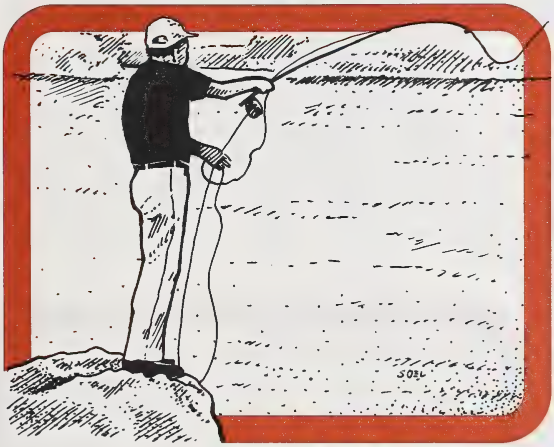
Ethical Behavior

Introduction

Fishing is a popular outdoor activity. Each year in Alberta more people go fishing than engage in any other single sporting activity. Naturally fishermen encounter other fishermen, other resource users and landowners.

As fishermen our behavior affects ourselves, and other people. As good sportsmen we must have a respect for wildlife, knowledge of our natural surroundings, a sense of fair play and consideration for the rights and expectations of others.

Rules and regulations give us some direction as to how to be good sportsmen. In fishing, as in all sports, there are many more individual opportunities and choices than there are rules and regulations. In fact, one of the most important choices is whether or not to follow the rules and regulations. This is especially important when no one else is around. Another important choice may be what to do when there are no rules and regulations which apply to a certain situation. The ethics of good sportsmanship apply in both cases.



Definition of Ethics

Ethics are "unwritten laws" governing behavior. They are usually based on respect for one's self and for others. A fisherman must ask himself "What if someone else behaved this way - would I respect him? Ethics guide and reflect our behavior. Respect is the result. As good sportsmen, fishermen accept and obey fishing regulations.

However, occasionally a fisherman may find himself in a situation not covered by the regulations. At these times his personal code of ethics directs him. For example, if only small fish seem to be in a particular pool in a stream, should a fisherman catch them anyway? If the daily limit in a stream is ten fish should a fisherman catch and keep ten fish every time he goes fishing?

All of us have seen empty fishing lure packages carelessly discarded by fishermen along the bank of a stream or lake. Although this is an unlawful act it occurs. The ethics of good sportsmanship could have prevented this littering.

Personal Code of Ethics

A personal code of ethics helps us decide what to do in all situations. It is based on our respect for other people, their property, the environment and ourselves. Our personal code of ethics probably changes as we grow to become better fishermen and sportsmen.

Fishermen go fishing because they enjoy the activity, the great outdoors, their companions and occasionally a meal of fresh caught fish. However, as fishermen evolve from novice to expert, those factors which once brought satisfaction may change. A novice fisherman may wish to catch any fish regardless of size. A more experienced fisherman may only be satisfied if he catches his limit. For the trophy fisherman numbers of fish do not matter. It is the size of a particular fish which excites him.

Some Ethics for Consideration

Various people have proposed ethical standards which they feel should be adopted by all fishermen. These are presented for your consideration in the remaining sections of this chapter. Consider each example carefully and use good behavior in your personal code of fishing ethics and practice it in the field.

Fisherman-Landholder Relations

A fisherman realizes he is a guest of the landholder while fishing on private land. He makes sure he is welcome by asking his landholder host for permission. On rare occasions if permission is denied, he accepts this situation gracefully.

In order to avoid disturbing the landholder early in the morning an ethical fisherman plans ahead and obtains permission to fish on private land in advance. He understands that the landholder usually does not mind if he brings a friend or two along but he may destroy his welcome if he arrives with a carload of companions.

He leaves all gates as he finds them, and if closed, he ensures they are securely latched. He crosses fences so as to avoid loosening the wires and posts. He only goes on those portions of private land where the landholder has granted him permission to fish. Please note that you should never assume a welcome on private property simply because other fishermen have already been granted permission to fish there.

The ethical fisherman takes extra care to avoid littering the land with sandwich wrappings, pop cans, cigarette packages or other garbage, including empty fish hook packages. On private land never drive or walk through standing crops. While driving across pastures or plowed fields, he keeps his vehicle on the trail or road at all times. He understands that the ruts left by vehicles on hillsides can cause serious erosion when water runs down these tire tracks. When crossing private land he goes on foot as much as possible rather than driving. When parking his vehicle, he is careful not to block access to buildings, equipment and roadways. If he notices anything wrong such as open gates, broken fences or injured livestock, he reports it to the landholder as soon as possible.

Before leaving, he thanks the landholder or a member of his family for the privilege of fishing on their property and he offers a share of his catch if he has been successful.

Remember, a landholder has no respect for those who trespass. For the short time it takes to ask, why not feel welcome and know you may come back again.

Regard for Other People's Feelings

When fishing on public lands, a fisherman shows the same respect for other users of the land and their property as he shows for landholders on private land.

He fishes in areas where his activities will not conflict with other people's enjoyment of the outdoors. And he treats the land with respect - being careful not to litter the back country or damage its vegetation. He limits his use of a vehicle to travel to and from his fishing area and always remains on trails or developed roadways.

When cleaning his fish an ethical fisherman recognizes that many people are offended by the sight of a bloody fish head and viscera left on the shoreline or in picnic areas. Flies and offensive odors reduce their enjoyment of the outdoors. Realizing these things and having respect for the feelings of others, he makes a special effort to clean his catch where it will not create an offensive environment. It is important to use public fish cleaning stations or wrap the vicera in paper and seal it in plastic bags before placing it in a proper disposal container.

When trolling by motor boat the well behaved fisherman does not approach closely to other boats, canoes, shore fishermen or swimmers. He shares space at docks and loading ramps, assists other boaters and does not block roadways with his vehicle or boat trailer. He is careful not to leave his boat motor in such a manner as to drip any oil into a lake or stream. He knows this pollution will harm small fish or aquatic organisms used by fish for food.

Avoid leaving any litter such as outboard motor oil cans, food or beverage containers, or other refuse in the water or on shore.

Relationship with Other Fishermen

An ethical fisherman avoids behavior that will interfere with another fisherman or his enjoyment of the activity.

If disputes arise with other fishermen, he tries to work out a compromise - perhaps sharing a pool or fishing opposite sides of a stream. He does not "hog" an especially good fishing spot - he does just the opposite. He gives others the advantage of fishing there whenever possible. Special consideration should be shown for the inexperienced or handicapped fisherman by allowing them to fish from the most advantageous position. He realizes the true satisfaction in fishing does not depend on competing with others for a catch or limit.

An experienced fisherman may invite a novice fisherman to accompany him. He takes the time to share his fishing knowledge with his companion and introduces him to the enjoyment of fishing. He may also spend time taking seniors fishing who might otherwise be unable to go. He realizes that a person learns something very important about his own behavior when he teaches others to fish.

He observes the rules of common sense at all times and firmly insists that his companions do the same. He politely lets others know when he thinks their behavior is out of line.

Self-respect

An experienced fisherman realizes that it is his responsibility to know how to take care of himself in the outdoors, and he respects his limitations.

He never places his life or that of others in jeopardy by failing to notify someone where he intends to fish and how long he expects to be gone. If his plans change once afield, he leaves a note on his vehicle designating his destination, time of departure and expected time of return.

To cope with unexpected outdoor emergencies, a well-informed fisherman learns and practices the basic skills of first aid and survival and he understands how to recognize and deal with hypothermia.

Respect for Wildlife

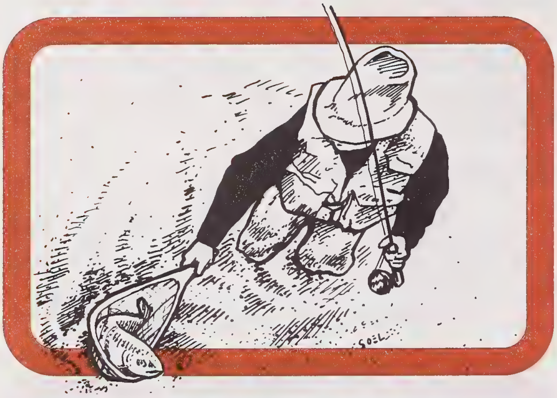
An ethical fisherman is not just a sportsman, his interest in wildlife extends beyond fish to the variety of other living things that inhabit the outdoor world. He studies nature's ways and realizes that wildlife can be enjoyed year round - not only during fishing season.

Catch and Release Fishing

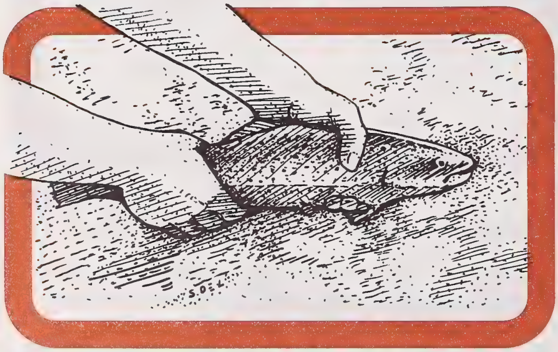
There is a growing trend among fishermen to release unharmed a portion of their allowable catch. Fishermen are encouraged to retain only enough fish to satisfy immediate needs such as an evening meal. A released fish has an excellent chance of survival provided it has been handled properly on appropriate tackle. A released fish may be caught again by other fishermen. This fish has the potential to provide greater recreation. This is very important when we realize that demand is increasing for a limited supply of fish. And finally, releasing fish results in considerable personal satisfaction to the fisherman. The goal of catching a fish does not have to include killing it.

When releasing fish, an ethical fisherman realizes that poor survival of caught fish results from two factors: damage to the fish by the hook and damage to the fish by rough or improper handling.

A fisherman who intends to release fish should use barbless hooks to minimize damage to the fish and make releasing much easier. He does not play a fish too long as it may become too exhausted to recover.



An ethical fisherman does not drag fish over rocks in shallow water or allow the fish to flop and struggle on the shore. If possible he keeps the fish in deep water and uses a net so the fish does not have to be hand held. An ethical fisherman does not "throw" fish back in the water as this may damage soft internal organs such as the swim bladder. Rather he gently places the fish in water and ensures it is sufficiently recovered to swim on its own.



If the fish appears exhausted, gently steer the fish upstream so water flows through the gills or move the fish back and forth in the water until it fully recovers and tries to escape. Use dry hands so you do not have to squeeze a fish too hard when holding it. Do not grasp a fish by the eyes but rather hold it firmly back of the gill covers behind the head with one hand and by the tail with the other hand.

An ethical fisherman knows that baited hooks are often swallowed by fish and are difficult to remove. Whenever possible avoid the use of baited hooks in favor of artificial lures or artificial flies, especially if you intend to release fish.

Respect for Laws

The ethical fisherman pays close attention to fishing regulations and insists his fishing companions do likewise. As an "Outdoor Observer" he reports any violations he witnesses to the proper authorities and so helps protect fishing opportunities in Alberta for himself and for future generations.

A violation may be reported by calling the Outdoor Observer hotline toll-free at 1-800-642-3800.

The ethical fisherman willingly cooperates with Enforcement Officers.

Importance of Ethics

The ethical fisherman realizes that the future of sportfishing in Alberta depends on the respect we have for ourselves, others and the environment. He knows that rules and regulations alone will not ensure good fishing in the future and that the most important factor is the behavior of the fishermen themselves.

Legal Responsibilities

Introduction

Approximately 450 000 Albertans and visitors are involved in sport fishing each year. Fishing regulations are necessary to provide an equal distribution of the available fish to each fisherman. In addition, regulations protect the fish resource to ensure continued fish production and maintain the quality of fishing. Every responsible angler realizes that obeying the laws governing fishing is the most important step towards becoming a respectable sportsman.

This is only an outline and summary discussion of the matters referred to, and is not intended to constitute or be ruled upon as legal advice. For legal advice, opinion and interpretation, interested persons should consult their solicitors and refer to official copies of the legislation and regulations concerned.

Legal Process

In our society today, laws may be defined as rules governing human conduct established by a governing authority and enforced by the courts. Legislation is the process of putting laws into action.

The Constitution Act, 1981 provides to the Government of Canada the legal authority and responsibility for Seacoast and Inland Fisheries in Canada. This responsibility is carried out through the Fisheries Act of Canada. The Fisheries Act provides authority for the making of regulations pertaining to fisheries. Regulations are made for each province and by mutual agreement, the regulations are administered by the Provincial Government. Regulations governing the fishing in Alberta are the product of substantial input from the Alberta Government and are enacted as law by the Governor in Council of Canada. These laws and regulations are then administered by the Alberta Fish and Wildlife Division.

The operation of private and commercial game fish farms are not under the Alberta Fishery Regulations, but are governed by provincial laws and regulations.

The Purpose of Fishing Laws

The purpose of the Alberta fishing regulations is to protect and conserve the fisheries resource and prescribe certain standards of conduct for fisherman.

Laws to Protect and Conserve Fish

a) Seasonal closures
b) Daily catch and possession limits
c) Size restrictions
d) Bait restrictions
e) Catch and release
f) Barbless hooks
g) Prohibitions against putting pollution, waste, and deleterious substances in waters

Laws to Govern Conduct of Fishermen

a) Number of lures on line
b) Artificial lures
c) Number of lines that may be used
d) No snagging
e) No set lines

In addition, there are a number of other regulations that apply to fisherman.

Small Vessel Regulations

a) Use of lifejackets
b) Boat safety equipment
c) Safe handling of boats

Criminal Code

Numerous types of conduct which society considers unacceptable are offences under the Criminal Code. The following are just a few examples, and are in no way an exhaustive list of provisions that may apply.

Everyone who makes, or causes to be made, an opening in ice that is open to or frequented by the public, is under a legal duty to guard it in a manner that is adequate to prevent persons from falling in by accident, and is adequate to warn them that the opening exists.

In addition, the Criminal Code makes it an offence to operate a boat in a dangerous manner, or when the operator is impaired, and certain requirements apply to towing a vessel.

Litter Act

Anglers must keep their fishing area clean of litter such as fish remains, bottles, cans, paper and in particular ice fishing huts or material used as an ice fishing hut. Please respect the environment and your fellow fisherman by removing all litter and depositing it in an acceptable garbage receptacle.

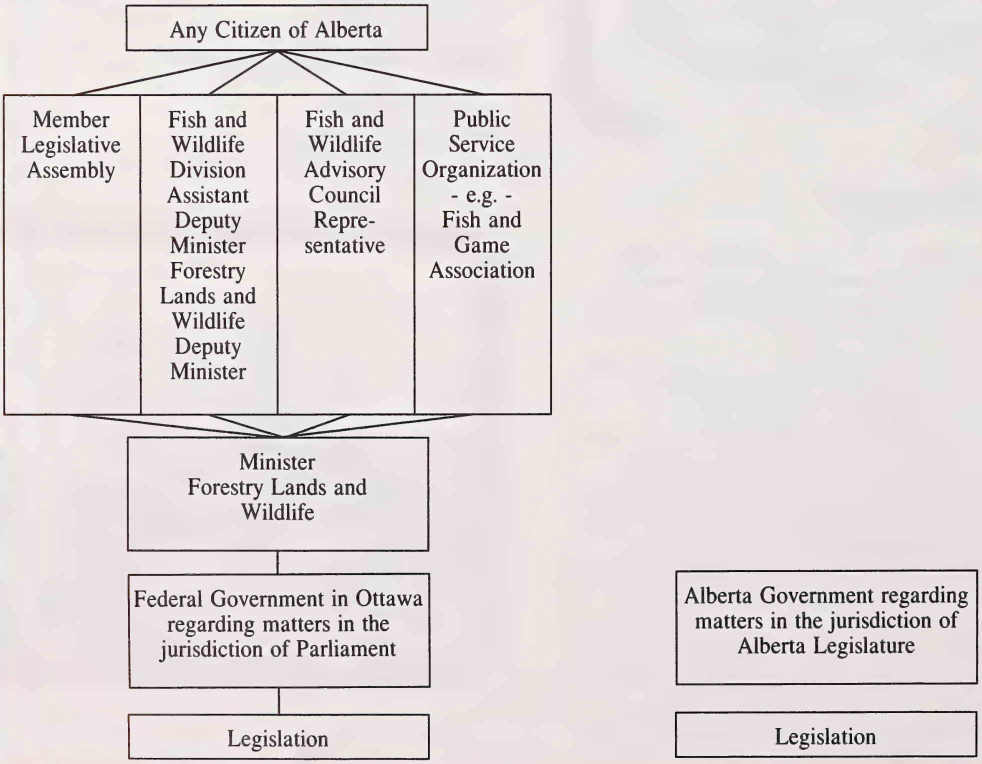
Creating or Changing Laws

Only duly elected government officials have the legal capability to create or change laws. However, avenues are available to the public to influence legislation. If you want to see a new law enacted or an existing law changed, you should make your elected representative to the government aware of your thoughts.

If you are convinced the law is wrong, work to change it but do not disobey it. Many people have found that as they considered their reasons for wanting a law changed, the purpose behind the law became evident. Studying the law will provide an in-depth understanding of why it is in place.

Alberta citizens have several avenues open to them to create or change fishing laws in the province.

Request for New Law or Change


Any Citizen of Alberta
Member Legislative Assembly
Fish and Wildlife Division Assistant Deputy Minister Forestry Lands and Wildlife Deputy Minister
Fish and Wildlife Advisory Council Representative
Public Service Organization - e.g. - Fish and Game Association
Minister Forestry Lands and Wildlife
Federal Government in Ottawa regarding matters in the jurisdiction of Parliament
Alberta Government regarding matters in the jurisdiction of Alberta Legislature
Legislation
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Understanding Fishing Regulations

It is the responsibility of every fisherman in Alberta to know the rules and regulations that apply to fishing in Alberta.

The Alberta Fish and Wildlife Division publishes a pamphlet annually called "Guide to Sportfishing Regulations", outlining the main regulations governing fishing by persons engaged in sportfishing.

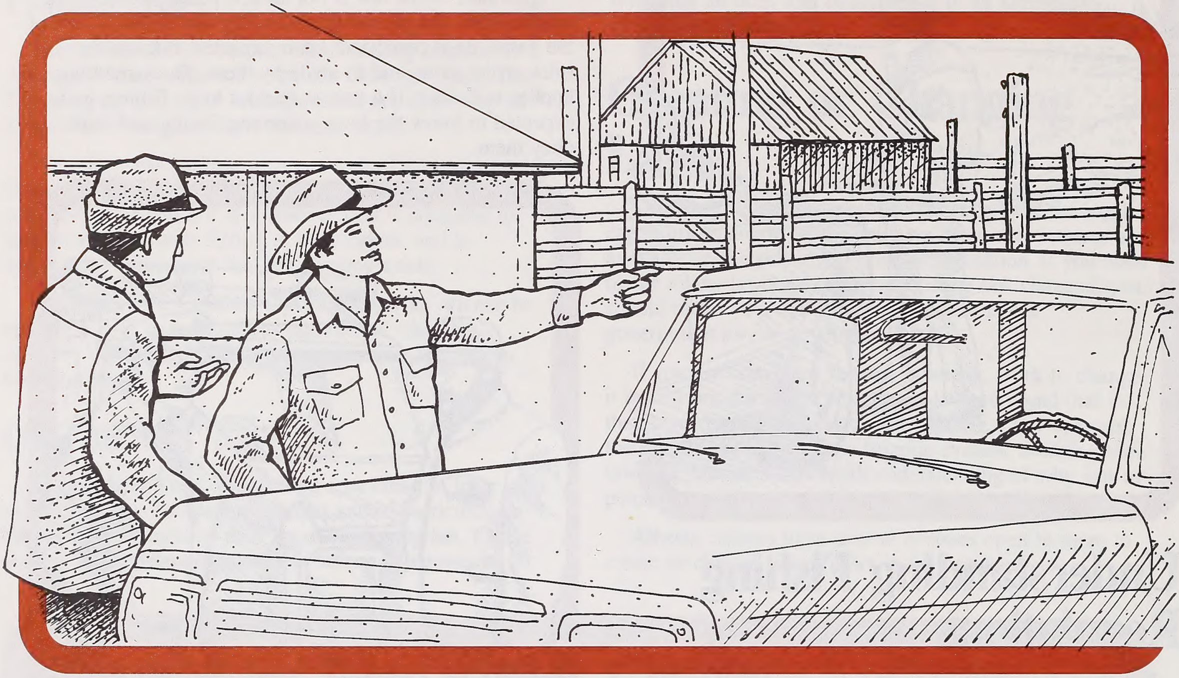
Fishermen should obtain copies of the guide and study them before going fishing. If a fishermen has questions concerning fishing regulations that are not in the guide, or if any of the information is unclear, he should contact the nearest Fish and Wildlife Division office for clarification.

Ignorance of the Law

Ignorance of the law is not an acceptable defence in a court of law. If a person plays hockey and breaks a rule of the game, he is penalized. He is expected to know the rules of the game and to abide by them. The same thing applies to fishing. If a person decides to go fishing, he is expected to know the laws governing fishing and must obey them.

Interpretation of the Law

Laws should be written so they are interpreted the same way by everybody. However, in practice this is a very difficult goal to achieve. Because people may interpret some laws differently or rely on misinformed sources of information, they can become confused about what the law allows and what it does not. One area of law that is confusing to many fishermen, yet which they need to interpret correctly, is the subject of trespass and access to public and private land.



Access to Public and Private Lands for Sportfishing

Most lakes and streams have public access points. With very few exceptions, the beds and shores of all permanent and naturally occurring bodies of water and of all naturally occurring rivers, streams, watercourses, and lakes are public land. However, Albertans may find that to gain access to some water bodies they would first need to enter or travel over private land or land held under some type of disposition from the Crown. There are a number of laws governing access and trespass, and you should be aware of them.

Of primary interest to landholders and recreationists are the common law and the access-related provisions of the Criminal Code and Petty Trespass Act.

The common law provides that, unless done with lawful justification, entering upon the land of another person, remaining on it, or placing something on it, is in each case a trespass for which legal action may be commenced.

The Criminal Code provides that a person in peaceable possession of real property may remove trespassers from that property.

Where a person has been given notice not to enter, the Petty Trespass Act prohibits trespass on private land, as well as public land under disposition granted under the Public Lands Act (except in the case of a grazing lease or grazing permit). Notice may be given in writing, by word of mouth, or by signs posted at the corners and access points.

Subject to provisions of the lease, the holder of a grazing lease has the right of exclusive possession. This gives him the right to exclude trespassers and sue any trespasser for damages caused by a trespass. As a person in peaceable possession of real property, he furthermore has the right to remove trespassers pursuant to the Criminal Code, and any person who attempts to resist such a removal is deemed, under the Criminal Code, to have committed an assault.

In addition to comply with the legal provision applicable to a given piece of land, be sure to respect the rights and point of view of the landholder or lease holder. Good ethics by sportsmen make for good relations with landholders and your fellow sportsmen.

Outdoor Observer

As well as following sportfishing regulations yourself, it is your responsibility to encourage others to do the same by making them aware of the regulations. Also report any offence you witness to a Fish and Wildlife officer, Parks officer or to the police. A violation may also be reported by calling the Outdoor Observer hotline toll-free at 1-800-642-3800.

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